

Entrepreneurship and Incarceration

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Abstract

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This dissertation examines entrepreneurship as a way to overcome labor market discrimination. Specifically, the three empirical essays of this dissertation introduce and evaluate entrepreneurship as a career choice for the formerly incarcerated population in the United States, by studying the antecedents and economic and social impacts of entrepreneurship for formerly incarcerated individuals.

The first essay examines whether entrepreneurship is a response to labor market discrimination for formerly incarcerated individuals and establishes entrepreneurship as a route to achieve economic and social reintegration. I take advantage of a quasi-experimental setting using the staggered implementation of the “Ban-the-Box” policy in the United States to disentangle the underlying mechanism of how labor market discrimination affects formerly incarcerated individuals in their entrepreneurial choices. The findings suggest that formerly incarcerated individuals, especially those who are African American, are pushed into entrepreneurship due to the discrimination they face from employers. Yet, I also find that entrepreneurship is a viable alternative career choice for formerly incarcerated people, yielding higher income and lower recidivism rates.

The second essay investigates the long-term impacts of entrepreneurship on subsequent employment outcomes for the formerly incarcerated population. This essay argues that entrepreneurship will benefit formerly incarcerated entrepreneurs in subsequent employment outcomes, because entrepreneurship provides a positive signal of commitment and fit to potential

employers. Results suggest that, compared to formerly incarcerated individuals without any entrepreneurial experience, those with entrepreneurial experience have an increased likelihood of securing employment, regardless of actual entrepreneurial success. This is particularly true for formerly incarcerated individuals who are high school dropouts or racial, suggesting that entrepreneurship provides long-term benefits to those who are especially lacking in other positive credentials and, thus, are the most stigmatized by employers.

The third essay studies the entrepreneurial barriers that formerly incarcerated individuals face in starting their businesses and the implications of such barriers on entrepreneurial outcomes. I find that formerly incarcerated individuals are far less likely to gain access to capital from financial institutions or the government compared to similar non formerly incarcerated individuals, having to rely on personal savings or capital from family and friends. This barrier to gaining resources from financial institutions is more pronounced for African American or Hispanic formerly incarcerated individuals. Furthermore, I find that such barriers to entrepreneurship negatively impact the ventures that formerly incarcerated individuals found regarding the industry, longevity, size, and legal form. These findings provide implications to understanding how such barriers to entrepreneurship can inhibit the role of entrepreneurship as an alternative pathway for discriminated individuals to achieve upward mobility and integration.

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Introduction

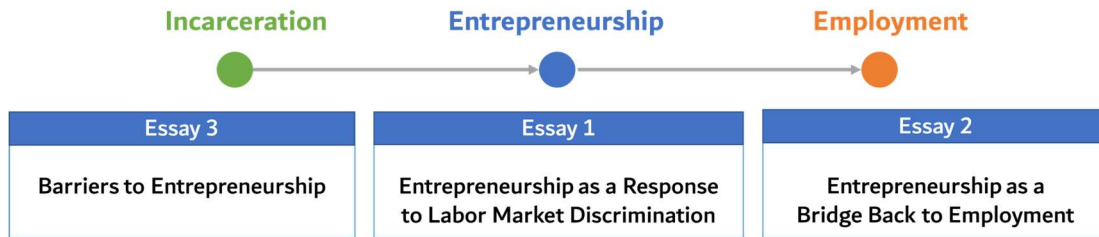
This dissertation explores entrepreneurship as a way to overcome labor market discrimination for the formerly incarcerated population in the United States. Despite the United States having the world's largest incarcerated population, formerly incarcerated people continue to face discrimination in employment, leading to persistent social and economic inequality. My dissertation introduces entrepreneurship as an alternative pathway for formerly incarcerated people, particularly those who are racial minorities, to overcome employment barriers, mitigate disadvantages in income and upward mobility, and subsequently achieve social integration. My work provides unique implications as the first study to examine entrepreneurship as a response to labor market discrimination for formerly incarcerated people. My dissertation further speaks to systemic racism in the criminal justice system by highlighting how entrepreneurship presents much-needed opportunities to those who face the greatest stigma in the labor market – justice-impacted African and Hispanic Americans.

The first essay of my dissertation investigates why formerly incarcerated individuals engage in entrepreneurship, and how it impacts their economic and social integration. I find that formerly incarcerated individuals, particularly those who are African American, are pushed into entrepreneurship as an alternative career choice because of the lack of employment opportunities due to discrimination. Entrepreneurship helps reduce the income inequality that formerly incarcerated people experience in wage-employment by more than 60 percent and is more effective than wage-employment at decreasing the rate of going back to prison. By introducing entrepreneurship as a beneficial pathway for formerly incarcerated people, this essay addresses the important challenge of helping stigmatized individuals overcome persistent labor market discrimination without solely depending on employers.

Having investigated the immediate effects of entrepreneurship for formerly incarcerated people, in the second essay of my dissertation, I focus on the long-term effects of entrepreneurship. Does entrepreneurship benefit or harm subsequent employment for formerly incarcerated people? I find that when compared to formerly incarcerated individuals without any entrepreneurial experience, those with entrepreneurial experience have an increased likelihood of securing subsequent wage-employment because entrepreneurship sends a positive signal to potential employers, regardless of entrepreneurial success. This is particularly true when they are high school dropouts or racial minorities (African and Hispanic Americans), suggesting that entrepreneurship provides long-term benefits to those who are lacking in other positive credentials and, thus, are the most stigmatized by employers. These findings provide insights on how entrepreneurship not only helps formerly incarcerated individuals while they are entrepreneurs but also after they leave their ventures to reenter employment.

In the third essay of my dissertation, I take a step back and explore the antecedents of the first two essays: the process through which formerly incarcerated individuals embark on entrepreneurship. Specifically, I examine whether incarceration poses barriers to entrepreneurial entry and the long-term impact of such challenges on entrepreneurial outcomes. I find that formerly incarcerated individuals, particularly those who are African or Hispanic Americans, have difficulty securing financial capital from financial institutions or the government. Such financial barriers lead formerly incarcerated individuals to start businesses that are not only in low-capital intensive industries but also smaller in size and shorter in longevity. This essay showcases the potential limitation of entrepreneurship as a way to fully overcome labor market discrimination for the formerly incarcerated people, by highlighting the lasting impacts that barriers to entrepreneurship have on the success and growth of their ventures.

Figure 0.1: The Three Essays of this Dissertation



My dissertation draws on data from the US National Longitudinal Survey of Youth 1997 and 1979. I combine this with hand-collected data and National Employment Law Project data on the implementation of a policy that delays criminal background checks until later in the hiring process (“Ban-the-Box”). I take advantage of a quasi-experimental design using the staggered implementation of state and county/city level “Ban-the-Box” policy. I also combine data on state differences in occupational licensing barriers for formerly incarcerated individuals from the Institute for Justice. I also conducted 67 in-depth interviews with currently incarcerated individuals in Arizona State Prison Complex, formerly incarcerated entrepreneurs and employees, employers, and non-profits to gain further insights.

My dissertation contributes to understanding entrepreneurship as a pathway to economic and social integration for those who are marginalized in the labor market and society. While most entrepreneurship research has focused on high-growth entrepreneurship by privileged groups, my dissertation highlights the important, yet under-explored, role of entrepreneurship as a way to overcome inequality for stigmatized groups. While my dissertation focuses on the formerly incarcerated population, my work provides insights for other disadvantaged groups by addressing broader theories of discrimination. I hope my work informs scholars and policymakers to consider entrepreneurship as a viable way forward for people facing barriers in the labor market and society.

Essay 1: Entrepreneurship as a Response to Labor Market Discrimination for Formerly Incarcerated People

1.1 Introduction

With over 2.2 million people currently incarcerated as of 2018, the United States has the highest incarceration rate in the world (Bureau of Justice Statistics 2018). This has led to more than 600,000 people per year reentering society from incarceration (Bureau of Justice Statistics 2019). Successful reentry is the exception however, with over two-thirds of formerly incarcerated people rearrested within three years of reentry (Alper et al. 2018).

One of the key factors thwarting successful reentry is the severe discrimination in the labor market faced by formerly incarcerated people. As of 2018, formerly incarcerated people suffer from an unemployment rate of 27.3 percent compared to 5.8 percent for the general public (Prison Policy Initiative 2018). Formerly incarcerated individuals – especially those who are African American – are not only less likely to be hired by employers, but those who are hired earn lower wages and experience less wage mobility (Petit and Western 2004, Western and Beckett 1999, Pager 2003, Western 2002, Uggen et al. 2014, Sugie 2018). The evidence from research, combined with first-person accounts, has given rise to a stylized fact which is captured by an unemployment-recidivism narrative: formerly incarcerated individuals face labor market discrimination that leads to unemployment or underemployment, and as a consequence their likelihood of returning to prison substantially increases. In informing this narrative, scholarly research has also fueled our understanding that until labor market discrimination is substantially reduced, the U.S. will continue to be faced with poor reentry outcomes.

In this paper we offer a modification to this narrative by drawing attention to formerly incarcerated people who become entrepreneurs.¹ Here, entrepreneurship is examined as a response to labor market discrimination (Lippman, Davis, and Aldrich 2005, Burton, Sørensen, Dobrev 2016, Sørensen and Sharkey 2014, Yang and Kacperczyk 2018), where one not only overcomes this discrimination by earning an income through starting a new business, but in doing so also increases the overall chance of successful reentry. Through this examination we seek to complement long-run efforts to reduce labor market discrimination with an evaluation of entrepreneurship as an alternative pathway to find work and income. This alternative is rarely the first option for someone returning from prison, but when labor market opportunities are suppressed, the relative attractiveness of entrepreneurship increases. In this way, we also contribute to the important yet challenging question of how stigmatized individuals can overcome persistent labor market discrimination without solely depending on employers' shifting priorities and public policy changes (Waldinger, Aldrich, Ward 1990, Conti, Kacperczyk, and Valentini 2018, Thébaud 2015, Bates and Bates 1997). Thus, while we maintain the existing narrative of unemployment and recidivism for formerly incarcerated individuals, this paper broadens the focus on employment to include entrepreneurship.

We base our thinking on the premise that social and structural contexts shape entrepreneurial activity above and beyond any effects of individual characteristics (Aldrich 1999, Sørensen 2007, Dobrev and Barnett 2005, Stuart and Sorenson 2005, Sorenson and Audia 2000, Stuart and Ding 2006). In particular, we draw from research highlighting that the incentives that lead individuals toward entrepreneurship are embedded in structural opportunities available in

¹ Following prior studies on entrepreneurship, we define entrepreneurship conceptually as launching a new business (Sørensen and Sharkey 2014, Yang and Aldrich 2014) and operationally as self-employment (Aldrich 1990, Greenfield et al. 1979, Fairlie 1999, Hegde and Tumilson 2018). For robustness, we also examine incorporated self-employment and self-employment with employees.

the conventional labor market (Burton, Sørensen, and Beckman 2002, Burton et al. 2016, Sørensen and Sharkey 2014, Kacperczyk 2012). Scholars emphasize that entrepreneurial entry becomes more attractive when individuals face less compelling opportunity structures in employment (Thébaud 2015, Rider et al. 2019, Kacperczyk and Marx 2016, Yang and Kacperczyk 2018), suggesting that individuals who are excluded from opportunities in the conventional labor market seek entrepreneurship as an effort to secure income when other employment options fail (Lippman et al. 2005, Keister 2000). Entrepreneurship has been further investigated as a valid alternative to discrimination in the labor market, providing a source of upward economic and social mobility for discriminated individuals (Lippman et al. 2005, Waldinger et al. 1985). While prior work has thus examined entrepreneurial patterns of population groups that face structural discrimination in the conventional market such as women (Thébaud 2015, Yang and Kacperczyk 2018, Rosti and Chelli 2005), LGBTQ (Conti et al. 2018), immigrants (Waldinger et al. 1985, Min 1993, Light 1972), and racial minorities (Walstad and Kourilsky 1998), we apply this theoretical lens to formerly incarcerated individuals and their entrepreneurial decisions. This paper, to our knowledge, is the first to directly examine entrepreneurship as a function of labor market discrimination for formerly incarcerated people.

Specifically, this paper investigates whether formerly incarcerated individuals are more likely to become entrepreneurs compared to those who have never been incarcerated. As formerly incarcerated individuals face few opportunities in paid employment due to discrimination from employers (Pager, Western, and Bonikowski, 2009, Pager 2003), these individuals may be pushed into starting their own businesses (Lippman et al. 2005, Sørensen and Sharkey 2014). Thus, compared to similar individuals who have never been to prison, formerly incarcerated individuals may be more likely to enter entrepreneurship as a route to secure work

and income. Importantly, we unpack an underlying causal mechanism of why formerly incarcerated individuals become entrepreneurs. The decision to become an entrepreneur is driven not only by opportunity structures in the labor market but also individual characteristics correlated with incarceration such as education, risk-preference, and poverty. We parse out the diverse underlying mechanisms driving entrepreneurial entry of formerly incarcerated individuals, by taking advantage of a quasi-experimental setting that exogenously impacts the opportunity structure that formerly incarcerated individuals face in the labor market - the staggered implementation of state and county/city-level policy in the United States, the “Ban-the-Box” policy. The “Ban-the-Box” policy, which has been implemented in 35 states and over 150 counties as of 2019, bars employers from checking criminal backgrounds until later in the hiring process (Avery and Hernandez 2019). The policy aims to mitigate discrimination in the employment process and increase employment opportunities for individuals impacted by the criminal justice system. We use the introduction of this policy to unpack whether entrepreneurial entry of formerly incarcerated individuals is driven by the lack of alternative employment opportunities in the labor market.

We find that formerly incarcerated individuals are more likely to become entrepreneurs than those who have never been incarcerated. More critical to our thesis however, the likelihood of entrepreneurship for those who have been to prison varies by whether or not they were residing in a jurisdiction where the “Ban-the-Box” policy was implemented. In particular, formerly incarcerated individuals are less likely to enter into entrepreneurship when “Ban-the-Box” policy is implemented in the jurisdiction of residence, indicating that a key reason that formerly incarcerated individuals pursue entrepreneurship is to overcome labor market discrimination. We also find this effect is strongest for black formerly incarcerated individuals,

who experience the greatest labor market discrimination before the implementation of “Ban-the-Box.” These findings help us gain insight into the underlying mechanism of how the change in the severity of labor market discrimination affects entrepreneurship rates.

We further investigate whether entrepreneurship can be a viable response to labor market discrimination for formerly incarcerated individuals by examining their income and recidivism rates. The negative relationship between incarceration and income is commonly attributed to the stigma of incarceration, as employers undervalue formerly incarcerated individuals as employees and impose income penalties (Holzer, Raphael, and Stoll 2003, Western and Beckett 1999, Western 2002). We argue that entrepreneurship will mitigate the income inequality that formerly incarcerated individuals experience in paid employment, as entrepreneurship provides an opportunity to earn based on one’s own productivity rather than an employer’s valuation (Lippman et al. 2005, Hegde and Tumilson 2018). We find supportive evidence that entrepreneurship provides formerly incarcerated individuals with higher income compared to their earnings from employment, helping formerly incarcerated individuals to reduce the income gap.

Concerning recidivism, we argue that entrepreneurship can yield greater economic incentives and social incentives, such as responsibility and work satisfaction, that attenuate formerly incarcerated individuals’ likelihood of reincarceration. We find evidence that entrepreneurship decreases the likelihood of returning to prison beyond the effect of paid employment, supporting the view of entrepreneurship as a way for formerly incarcerated individuals to successfully reenter the society. These findings on income and recidivism suggest that entrepreneurship may not only help discriminated individuals improve their economic well-being, but also to improve social integration.

We test the propositions of this paper using data drawn from the United States National Longitudinal Survey of Youth (NLSY97) from 1997 to 2015. We combine this dataset with data we collected from the National Employment Law Project on the implementation of “Ban-the-Box” policies in the U.S. at the state and county/city level (Avery 2019). We address endogeneity concerns by taking advantage of a quasi-experimental design, which uses the exogenous jurisdiction level policy shock, “Ban-the-Box.”

Our paper provides implications for theory, empirical work, and policy. We offer a modification to the current narrative on unemployment and recidivism for formerly incarcerated individuals by introducing entrepreneurship as an alternative route to successful reentry. We find that entrepreneurship provides an opportunity for formerly incarcerated individuals to not only find work and decrease economic inequality, but also to decrease recidivism rates. We contribute to empirical work by using a quasi-experimental design to establish causality and providing stronger evidence for the underlying mechanism between incarceration and entrepreneurship. Lastly, we provide policy implications by highlighting entrepreneurship as a route for formerly incarcerated individuals to overcome labor market discrimination without depending on employers.

1.2 Theory

1.2.1 Incarceration, Labor Market Discrimination, and Recidivism

In the past two decades, a growing number of studies have investigated the effect of incarceration on labor market outcomes. Scholars have found consistent evidence that contact with the criminal justice system leads to reduction in economic opportunities (e.g., Petit and Western 2004, Pager 2003). Research has documented that individuals coming out of prisons or

jails experience significantly lower employment, with the formal employment rate in the first year after release ranging from 40% to 64% (Western and Beckett 1999, Pager 2003, Freeman 1991, Waldfogel 1994, Petit and Lyons 2007). Scholars have further found that even when formerly incarcerated individuals do find employment, they are often relegated to jobs of lower quality (e.g., Western 2002, Sugie 2018). Formerly incarcerated individuals experience earnings penalties of 10% to 30% after release from prison, relative to their earnings prior to incarceration (Waldfogel 1994, Western 2002). Harding, Morenoff, and Wyse (2019) have found that formerly incarcerated individuals are often sorted into jobs that are characterized not only by lower wages, but also greater turnover, poor working conditions, and irregular work schedules. Other studies have emphasized longer term adverse effects of incarceration on economic opportunities, such as penalties in wage growth, upward job mobility, and job stability (Western 2002, Nagin and Waldfogel 1995, Bushway 1998).

Many studies on labor market outcomes have also observed racial disparities in the negative impact of incarceration on employment outcomes. Racial minorities, especially blacks, are not only more likely to be incarcerated but also face greater penalties for incarceration (e.g., Pager 2003, Western 2002, Pager, Western, and Sugie 2009, Lyons and Petit 2011). Pager (2003) shows that the adverse effect of a criminal record is 40% larger for blacks than for similar white candidates looking for employment. Lyons and Petit (2011) document greater wage penalties for black formerly incarcerated individuals – 10% lower earnings and 21% slower wage growth – compared to similar white formerly incarcerated individuals.

One of the main reasons for such negative employment outcomes for formerly incarcerated people is discrimination based on the stigma associated with incarceration (e.g., Pager 2003). Employers consider a criminal record as a “negative credential” signaling low

worker quality (Grogger 1992), untrustworthiness (Waldfoegel 1994), and lack of honesty (Lott 1992), and thus are less likely to hire formerly incarcerated individuals than comparable job applicants without an incarceration record (Western 2002, Uggen et al. 2014, Holzer et al. 2003). Particularly, the stigma of incarceration is intensified toward black job applicants, where employers are more likely to discriminate when race and incarceration are compounded (Pager 2003). A series of audit experiments have found that employers discriminate based on criminal records, reducing the likelihood of a “callback” by 50% for white applicants with a record and 60% for black applicants with a record (Pager 2003, 2007, Pager et al. 2009, Uggen et al. 2014). While there are additional individual level mechanisms through which incarceration may negatively affect subsequent employment, such as erosion of human and social capital (Kling 1999, Hagan 1993, Harding, Morenoff, and Wyse 2019), the institutional effect of employer discrimination remains the main driver of adverse employment opportunities (Sugie, Zatz, and Augustine 2020).

Researchers have underlined the significance of employment barriers associated with incarceration because employment is one of the strongest predictors of successful reentry. Studies show evidence that unemployment or job instability following release from prison increases the chances of reoffending (e.g., Uggen 1999, Shover 1996, Sampson and Laub 1997). Employment primarily provides formerly incarcerated individuals with the economic means for basic needs, reducing the material motivations for crime and increasing the costs of recidivism (Sampson and Laub 1997). Yet, beyond offering economic opportunities, employment is also a key foundation for social reintegration and commitment (Sampson and Laub 1997, Harding, Morenoff, and Wyse 2019). Uggen (1999) elaborates that employment, diminishes recidivism rates even controlling for wages. Commitment to work and work satisfaction itself is a positive

transition in the life course of formerly incarcerated individuals, reducing their motivation to commit another crime (Uggen 1999, Uggen 2000, Sampson and Laub 1997, Uggen and Staff 2001).

The adverse reentry consequences of unemployment or underemployment associated with labor market barriers for formerly incarcerated individuals has led to a stylized fact that is often represented by an unemployment-recidivism narrative. In this narrative, formerly incarcerated individuals face discrimination from employers that leads to unemployment or underemployment, and as a consequence their likelihood of successful reentry substantially decreases. The narrative and accompanying evidence have helped to focus researchers and policymakers on improving the employment prospects for formerly incarcerated people. Through efforts such as “Ban-the-Box” and Fair Chance Hiring, policymakers and employers have somewhat reduced employment barriers for individuals with criminal records overall and formerly incarcerated individuals in particular.

1.2.2 Incarceration & Entrepreneurship

Despite this focus on improving employment prospects, labor market discrimination persists for formerly incarcerated individuals. Their unemployment rate remains five times higher than individuals who have never been incarcerated, and employment for formerly incarcerated people is often limited to short-term, unstable, and lower paying jobs (Sugie 2018). Meanwhile, while labor markets discrimination persists, there is increasing anecdotal evidence of formerly incarcerated individuals carving out their own careers by becoming entrepreneurs. Yet research on understanding entrepreneurship as a reentry route for formerly incarcerated individuals has been sparse. This paper, to our knowledge, is the first to examine how entrepreneurship can be an alternative labor market choice for formerly incarcerated people.

In particular, we offer a modification to the unemployment-recidivism narrative by considering entrepreneurship as an alternative labor market choice for formerly incarcerated individuals. We argue that formerly incarcerated individuals may choose to launch their own business in response to barriers to employment. We suggest that entrepreneurship may provide formerly incarcerated individuals with not only economic opportunities but help their successful reentry into society. Thus, while gainful employment remains an important and primary path to successful reentry, we introduce entrepreneurship as an alternative route that formerly incarcerated individuals may pursue and benefit from when employment opportunities are scarce or of poor quality.

There are four key questions we seek to address in this paper. First, we examine the extent to which formerly incarcerated people engage in entrepreneurship compared to people who have not been to prison. Second, we investigate the underlying mechanism as to why people who have been to prison choose to become entrepreneurs. Third, we examine earnings to assess whether entrepreneurship helps formerly incarcerated individuals overcome economic inequality. Lastly, we address the question of how entrepreneurship affects successful reentry by investigating the recidivism rates of formerly incarcerated entrepreneurs.

1.2.2.1 Incarceration & Entrepreneurial Entry

The first question this study investigates is the extent to which formerly incarcerated individuals take part in entrepreneurship, compared to individuals who have never been to prison. Sociological approaches to entrepreneurship have emphasized the role of structural factors in shaping the decision to engage in entrepreneurship (North, 1990, Sorenson and Audia 2000, Hwang and Powell 2005, Sørensen 2007), particularly the opportunity structure of the labor market (Aldrich 1999, Sørensen and Sharkey 2014, Burton et al. 2002, Burton et al. 2016).

Individuals decide to take part in entrepreneurship after considering the distinct opportunities in the labor market, making entrepreneurial entry more appealing to individuals with fewer and less lucrative employment opportunities (Kacperczyk and Marx 2016, Yang and Kacperczyk 2018).

As the labor market opportunity structure has a profound influence on an individual's transition to entrepreneurship, scholars have suggested that discrimination in the labor market increases the likelihood of disadvantaged individuals to become entrepreneurs (Keister 2000). Lippman, Davis, and Aldrich (2005) argue that individuals engage in entrepreneurship when there are few, if any, other options for finding suitable work in the labor market. Thus, individuals who face blocked opportunities in the employment sector are pushed into entrepreneurship as an effort to secure income and a source of upward mobility. Accordingly, scholars have identified key population groups that, due to discrimination from employers, engage in entrepreneurship as a source of economic and social mobility. These population groups include women (Thébaud 2015, Yang and Kacperczyk 2018, Rosti and Chelli 2005), LGBTQ (Conti, Kacperczyk, and Valentini 2018), immigrants (Waldinger, Ward, and Aldrich 1985, Min 1993, Light 1972), and racial minorities (Walstad and Kourilsky 1998).

Therefore, while entrepreneurship entails uncertainty and a risk of failure, severe labor market discrimination can mean that the expected returns from employment for formerly incarcerated individuals are lower than the returns from pursuing entrepreneurship. Unemployment or low-quality employment (wages, work conditions, promotion opportunities, etc.) due to labor market discrimination lowers the opportunity costs of exiting employment and pushes individuals to pursue entrepreneurship. This implies that, compared to similar non-formerly incarcerated individuals, formerly incarcerated individuals are more likely to become

entrepreneurs. Accordingly, we formally test the extent to which formerly incarcerated individuals choose entrepreneurship as a labor market outcome.

1.2.2.2 Explanatory Mechanism of Incarceration & Entrepreneurship

Second, we unpack the underlying mechanism of why formerly incarcerated individuals enter entrepreneurship, compared to similar individuals who have never been incarcerated. This focus allows us to parse out the structural effect of labor market discrimination from the individual dispositional level effect that drives formerly incarcerated individuals to transition into entrepreneurship.

We argue that the main underlying mechanism driving formerly incarcerated individuals into entrepreneurship is labor market discrimination. As shown by many scholars, the stigma associated with the mark of a criminal record negatively impacts employment opportunities for formerly incarcerated individuals, by increasing unemployment, work-related insecurity, and income penalties (Pager 2007, Stoll and Bushway 2008, Pager et al. 2009, Sugie 2018). At the same time, individual level mechanisms such as preferences or human capital may make entrepreneurship more appealing than employment for formerly incarcerated individuals. Some scholars have found suggestive evidence that individuals who take part in criminal activity are similar to entrepreneurs, in terms of low risk aversion and preference for autonomy (e.g., Gottschalk 2009, Lockwood et al. 2006, Rieple 1998). Other studies also suggest that formerly incarcerated individuals possess human capital more fit for entrepreneurship than employment, such as higher entrepreneurial ability and lower employment-related skills (Fairlie 2002, Sonfield, Lussier, and Barbato 2001).

While both the structural mechanism of labor market discrimination and the individual level mechanisms may jointly drive the decision of formerly incarcerated individuals to

transition into entrepreneurship, our focus is on understanding the mechanisms associated with labor market discrimination while using a research design to control for individual level mechanisms. Thus, we examine whether labor market discrimination drives formerly incarcerated individuals to enter entrepreneurship, notwithstanding individual level mechanisms such as preferences or human capital. We are able to disentangle the two mechanisms by utilizing an exogenous change to one of the two drivers - labor market discrimination for formerly incarcerated individuals. As we argue that entrepreneurship is a response to labor market discrimination for formerly incarcerated individuals, we expect to find that an exogenous decrease in labor market discrimination for formerly incarcerated individuals will subsequently diminish their likelihood to enter into entrepreneurship. In particular, we expect the exogenous mitigation of employer discrimination to have the greatest negative impact on entrepreneurial transitions for formerly incarcerated individuals who face the most labor market discrimination – black formerly incarcerated individuals. By using the exogenous change of labor market discrimination, this study effectively isolates and verifies the effect of labor market discrimination on entrepreneurial transitions of formerly incarcerated people, beyond any individual effects.

1.2.2.3 Entrepreneurship & Income

Third, we investigate whether formerly incarcerated individuals are able to lower economic barriers through entrepreneurship, by examining earnings. Formerly incarcerated individuals experience considerable income penalties in employment because employers discriminate based on their incarceration record (Western 2002). In other words, independent of formerly incarcerated individuals' underlying ability, employers are more likely to undervalue formerly incarcerated employees based on the stigma associated with incarceration (Sugie et al.

2020, Pager et al. 2009). The stigma of incarceration makes employers connect formerly incarcerated employees with a range of undesirable characteristics such as dangerousness (Denver, Pickett, and Bushway 2017), untrustworthiness (Waldfogel 1994), and lack of honesty (Lott 1992), which leads to decreased wages and wage mobility (Western 2002,, Harding et al. 2019). Furthermore, this stigma leads to status loss with favorable or “good” jobs, altogether precluding entry into higher status or higher-paying employment positions (Pager et al. 2009, Holzer et al. 2004, Waldinger and Lichter 2003, Sugie et al. 2020, Sugie 2018).

Yet, unlike employees, who receive their earnings based on the employer’s valuation of their potential ability, entrepreneurs earn a function of their own ability rather than the employer’s noisy perceptions of it (Lippman et al. 2005, Hegde and Tumilson 2018). Thus, for employees that are undervalued by employers and thus face economic barriers, they are more likely to increase their earnings by exiting employment and engaging in entrepreneurship. Although entrepreneurship entails risk of business failure and higher earnings variance, the elimination of discrimination and stigma from employers will, on average, yield higher earnings from entrepreneurship compared to that from employment. These arguments suggest that formerly incarcerated people will be able to increase their earnings as entrepreneurs compared to their earnings as employees, as they no longer rely on the discriminatory perceptions of employers. Thus, we expect entrepreneurship to increase earnings, compared to their employment income, for formerly incarcerated individuals. We also expect to find that the income gap between individuals with and without prior incarceration will be smaller for entrepreneurs, compared to employees. By lowering the barriers to competitive earnings, entrepreneurship can provide formerly incarcerated individuals the opportunity to mitigate economic inequality.

1.2.2.4 Entrepreneurship & Recidivism

Finally, the fourth objective of this study is to assess how entrepreneurship impacts successful reentry, by examining recidivism rates. Employment is one of the strongest predictors of desistance to crime (Farrington et al. 1986, Shover 1996, Sampson and Laub 1993, Uggen 2000, Bushway and Reuter 2002). Employment not only provides immediate financial support but also increases future expected earnings, significantly increasing the opportunity cost of criminal behavior and consequentially reducing the likelihood of reoffending (Pezzin 1995). Thus, we expect that entrepreneurship, which we predict to yield greater economic opportunities than employment for formerly incarcerated individuals, will further reduce the likelihood of recidivism.

Moreover, entrepreneurship may also provide formerly incarcerated individuals social and psychological incentives to avoid activities that can lead to rearrest and reincarceration. Entrepreneurship entails being responsible for your business and often times the livelihood of fellow employees, increasing the sense of responsibility and commitment for formerly incarcerated entrepreneurs. Also, anecdotal evidence from formerly incarcerated entrepreneurs suggest that entrepreneurship enhances work satisfaction, self-esteem, and commitment.² Studies have found that commitment to work, work satisfaction, and personal fulfillment diminishes the likelihood of recidivism, beyond the financial aspect of work itself (Uggen 1999, Laub and Sampson 2003). Thus, such social and psychological incentives of entrepreneurship may further help individuals to stay out of prison. While it is beyond the scope of this paper to fully parse out these mechanisms, we expect entrepreneurship to decrease recidivism for formerly incarcerated

² Defy Ventures: <https://defyventures.org/blog/entrepreneurship-as-a-tool-for-social-change-reflecting-on-my-time-at-defy-ventu>

individuals beyond paid employment, supporting the view of entrepreneurship as a way for formerly incarcerated individuals to successfully reenter society.

By investigating the four research questions, this paper seeks to present a modification to the narrative of unemployment and recidivism. We complement the current narrative on employment by introducing entrepreneurship as an alternative route for formerly incarcerated individuals to overcome both economic and social barriers to successful reentry. In the following sections, we describe the data and methods, and show our empirical analyses that allows us to address the above research questions.

1.3 Data and Measures

In order to investigate our research questions, we merged data from the 1997 cohort of the National Longitudinal Survey of Youth (NLSY 97) with hand-coded data on “Ban-the-Box” policy changes for all states and counties/cities of the United States. The NLSY97 follows the lives of a representative cohort of 8,984 men and women, who were 12-18 years old when first surveyed in 1997. These individuals were interviewed annually from 1997 through 2011 and biennially thereafter. The restricted NLSY97 Geocode data provide identifying information about yearly state and county/city level residence by survey respondent, thus allowing us to utilize the state and county/city-level policy shocks to address the causal mechanism. As shown by prior research (e.g., Western 2002, Western and Petit 2010) the NLSY data is suitable for research on incarceration because it reports detailed data on youth detention and adult incarceration. Moreover, the NLSY dataset includes a comprehensive range of variables on entrepreneurship and employment, allowing us to examine entrepreneurial and employment transitions as well as related earnings. Our analyses use the NLSY 97 from years 1997 to 2015,

which is a balanced panel with 170,696 individual-year observations on 8,984 unique individuals. Our final estimation sample only includes individual-year observations of individuals when they are 18 years or older, to incorporate the plausibility of entrepreneurship as a career choice for individuals. We also exclude individual-year observations when the individual is currently incarcerated, as they are unable to participate in employment or entrepreneurship. This results in an estimation sample of a balanced panel with 140,814 individual-year observations.

We merged the NLSY 97 data with a hand-coded database on “Ban-the-Box” policy changes for all states and counties/cities of the United States. We generated this data by combining details of “Ban-the-Box” policies from the National Employment Law Project (NELP) (Avery and Hernandez 2018). We supplemented the data from NELP by hand-coding details from legislative bills and executive orders of states and counties/cities on the implementation of the “Ban-the-Box” policy or the Fair Chance Act. We collected data on the effective date of the policy and whether the policy included public, private, and/or contract employers.³ Our analyses consider “Ban-the-Box” policies for public employers effective by December 2015, which results in 18 states and 133 counties/cities that implement the “Ban-the-Box” policy.

We measured *Entrepreneurship* by examining whether a survey respondent reported their job as “self-employed.” The NLSY97 surveys explicitly define self-employment as: “self-employed jobs are where you own your own business (for example, a lawn service) or where you do the same type of task for many different people (designing web sites, for instance). In self-

³ When information about a policy’s effective date was available, we used that date as the start date of the policy; otherwise we used the date the policy was announced or passed by the legislature. If only the year (month) of implementation was available, we used January 1 of that year (the first of that month) as the start date.

employed jobs, you are your own boss.”⁴ This definition of self-employment is consistent with those used in surveys such as the Current Population Survey (CPS), the official source of data on employment and unemployment in the United States, as well as previous studies of entrepreneurship (e.g., Lippman et al. 2005, Portes and Zhou 1996, Yang and Aldrich 2014, Evans and Leighton 1989, Hegde and Tumlinson 2015). In order to exclude short-term self-employment stints or freelancing that are unlikely to be actual entrepreneurship (Sugie et al. 2020), we only include self-employment spells that last more than 4 weeks to measure entrepreneurship. As a result, on average 9.23 percent of the survey respondents were self-employed each year and 32.62 percent of the survey respondents had at least once experienced self-employment throughout the survey rounds. The statistics from our sample are comparable with CPS, which reports self-employment rates in the United States were approximately 10 – 11 percent during this period (Hippel 2010). While prior research does not sharply confine the concept entrepreneurship to creating an incorporated organization, or make someone’s status as an entrepreneur dependent on whether he or she employs others (Lippman et al. 2005), for robustness, we confirm whether our findings are consistent with a narrower definition of entrepreneurship. We use alternative measures of *Entrepreneurship* as (a) the subset of self-employed individuals who report owning an incorporated business and (b) the subset of self-employed individuals who report having employees. Our results are consistent throughout.

Prior Incarceration is measured by whether the survey respondent served time in a correctional institution. The NLSY97 documents monthly status of whether the respondent was incarcerated or not in each month of the year, collected yearly from 1992 to 2015. *Prior Incarceration* is 1 if the respondent responded as previously incarcerated in any months of year

⁴ NLSY variable codebook on self-employment can be found:
<https://www.nlsinfo.org/sites/nlsinfo.org/files/attachments/17036/NLSY97R17Employment.html>

$t-1$ or earlier, and 0 otherwise. *Prior Incarceration* provides the key information needed to estimate the effect of incarceration after release. We find that on average 1.59 percent of the survey respondents were currently incarcerated each year and 9.34 percent have been incarcerated at least once during the years 1992 to 2015. This is similar to statistics from other studies and samples, where the percentage of those that have been previously incarcerated range from 7.8 percent to 9.2 percent (Western 2002, Bonczar and Beck 1997). The accuracy of incarceration as measured in the NLSY has been further assessed by Western (2002) that shows comparable incarceration trends between the NLSY survey data and aggregate data from the CPS and BJS administrative data. Individuals were excluded from analyses in the years when they were currently incarcerated as they are unable to participate in employment or entrepreneurship. Current incarceration status can also be controlled for by adding a variable measuring whether respondent was incarcerated in current year t . This approach yields substantively identical results.

We measured *Recidivism* by examining whether a formerly incarcerated individual is reincarcerated after release from prison or jail. There has been active discussion on how to effectively measure recidivism, as recidivism has been a “fruit salad concept” measured in a variety of ways by different scholars (Beck 2001). While recidivism is conceptually defined as “reengaging in criminal behavior after receiving a sanction or undergoing an intervention for a previous crime” (National Institute of Justice 2014, Johnson 2017), there is considerable disagreement on how to operationalize this concept in terms of the scope of criminal behavior and the time frame. Some broadly define recidivism by counting any new contact with the criminal justice system, including minor offenses and rearrests for technical violations (Bureau of Justice Statistics 2016, United States Sentencing Commission 2016). Yet others argue that

recidivism should be more narrowly defined as the commission of a new serious offense, resulting in a new sentence (Administrative Office of the U.S. Courts, 2015). Our study follows this second school of thought and measures *Recidivism* as the re-incarceration of formerly incarcerated individuals for a new offense after release from their previous sentence. We find that 32.2 percent of formerly incarcerated individuals fall into recidivism under this measure. For robustness, we also measure *Recidivism* as the re-arrest of formerly incarcerated individuals for a new offense after release, which yields 44.28 percent recidivism rates. Both measures are consistent with the average recidivism rate in the United States found by other scholars (e.g., Bureau of Justice Statistics 2018), and we find identical results with both measures of *Recidivism*.

Earnings is measured as *Yearly Income in Dollars* and *Logged Yearly Income*. The NLSY97 surveys report income after checking the information against the individuals' information gathered from Employer Surveys and Current Population Surveys (CPS). It is possible that entrepreneurs' incomes and wealth are higher, not because they are compensated more for their work, but because they work more (Hegde & Tumilson 2018). Therefore, we conducted robustness checks by measuring individual earnings through their log hourly pay rates and find consistent results. Finally, according to some scholars, entrepreneurs under-report their income by as much as 30 percent (Sarada 2010). Therefore, we also use the reported net worth of respondents as a measure of their overall wealth and find consistent results.

The NLSY 97 categorizes race and ethnicity as *Black*, *Hispanic*, *Asian*, *White*, and *Mixed Race*. Our sample holds 25.99 percent *Blacks*, 21.16 percent *Hispanics*, 1.78 percent *Asians*, and 50.19 percent *Whites*, and 0.92 percent *Mixed Race*. We control for each race and ethnicity by adding dummy variables for all race categories except *Whites*, the omitted category. For most of

our analyses, we include individual-level fixed effects that control for race. We also examine sub-samples by race, as past scholarship on labor market discrimination and incarceration suggests that the main effects for each race may differ (Western 2002, Pager 2003). Indeed, we observe substantially different likelihoods of incarceration by race: 13.10 percent of *Blacks*, 9.26 percent of *Hispanics*, 4.38 percent of *Asians*, 7.42 percent of *Whites*, 13.25 percent of *Mixed Race* were ever incarcerated. We also include the control *Female*. In our sample 48.80 percent are female. Female respondents and male respondents show different likelihood of incarceration, as 3.76 percent of the female respondents were ever incarcerated, compared to 14.66 percent of the male respondents.

We account for individual-level human capital differences that may affect either the likelihood of being incarcerated or selection into entrepreneurship and employment. Specifically, we include variables on individual educational attainment and cognitive ability. We measured educational attainment by the natural logarithm of the years of total education completed, *Logged Years of Education*. We find similar results when measuring educational attainment as the highest educational degree attained. Cognitive ability of individuals is measured by the percentiles generated from the *Armed Services Vocational Aptitude Battery (ASVAB) Test*. The *ASVAB Test* or the composite percentile generated from this test (Armed Forces Qualification Test Score), has been used to measure the cognitive ability of individuals in the setting of both incarceration and entrepreneurship (Western 2002, Fairlie 2002, Hegde and Tumilson 2018). *ASVAB Test* measures the respondent's knowledge and skills in the topical areas of Arithmetic Reasoning, Math Knowledge, Word Knowledge, and Paragraph Comprehension. The NLSY respondents took the ASVAB from the summer of 1997 through the spring of 1998 when they were 12 to 18 years of age. We use the age-adjusted percentiles of the ASVAB test scores, which

were generated using the procedures described in the NLSY 97 Codebook Supplement Appendix 10.⁵

As scholars have found wealth to drive decisions to engage in entrepreneurship by providing resources that facilitate both the founding and management of a business (Renzulli, Aldrich, and Moody 2000, Evans and Jovanovic 1989; Evans and Leighton 1989), we control for the previous year's *Logged Yearly Income* and *Logged Family Income*. We measure lagged yearly individual and family income through annual survey questions that address respondents' own and total family income in the previous year. We also control for the *Number of Months Worked* in the previous year, including both self-employment and employment. We also control for the *Local Unemployment Rate* at the county/city-level, as the unemployment rate of the local area of residence may affect the respondent's employment and entrepreneurship opportunities in addition to incarceration. Finally, we include year and county/city level fixed effects.

Table 1 shows the descriptive statistics of the main variables from year 1997 to 2015. The first section of Table 1 provides the statistics for the full individual-year sample with 140,814 observations, while the second section of Table 1 provides the statistics for variables that apply to only formerly incarcerated individuals with 7,369 observations. Table 2 further provides illustrative statistics for one representative year, 2010, the first year where all survey respondents are 25 years or older. This table shows the individual-level statistics for all individuals, individuals who are never incarcerated, and those who have been formerly incarcerated, sorted by race. The raw statistics from Table 1 and Table 2 show that entrepreneurship rates among

⁵ NLSY 97 Codebook Supplement Appendix 10 can be found here: <https://www.nlsinfo.org/content/cohorts/nlsy97/other-documentation/codebook-supplement/appendix-10-cat-asvab-scores>

formerly incarcerated individuals is higher than for those never incarcerated, supporting our theory.

Table 1.1: Descriptive Statistics of Main Variables used in OLS Regressions, 1997 to 2015

	Mean	Standard Deviation	Min	Max
<i>Full Sample (Individual-Years, N=140,814)</i>				
Entrepreneurship	0.098	0.297	0	1
Past Incarceration	0.042	0.201	0	1
Ln(Years of Education)	2.487	0.165	2.30	3.04
Ln(Yearly Income)	2.157	1.527	-6.91	5.70
Ln(Family Income)	3.675	1.516	-2	6.91
Number of Months Worked	7.297	4.336	0	11
Local Unemployment Rate	6.403	2.588	1	27.8
<i>Sub Sample of Formerly Incarcerated Individuals (Individual-Years, N=7,369)</i>				
Recidivism (Re-incarceration)	0.204	0.403	0	1
Re-arrest	0.334	0.472	0	1
Years Since Release from Incarceration	4.029	3.753	0	18
Number of Years Incarcerated	1.052	1.463	0.083	11.5

*Note: Local Unemployment Rate is measured at the city/county level.

Table 1.2: Descriptive Statistics of Main Variables, 2010

	<i>Full Sample</i>	<i>Never Incarcerated</i>	<i>Formerly Incarcerated</i>
<i>Full Sample</i>			
Past Incarceration	6.7%		
Entrepreneurship	11.4%	11.0%	19.1%
Years of Education	12.74	12.85	11.49
ASVAB Ability Test	55.25	56.23	42.81
Age	27.99	27.98	28.16
Yearly Income in Dollars	25,272	26,081	16,669
Family Income in Dollars	90,224	93,466	49,613
Number of Months Worked	7.36	7.55	6.26
Local Unemployment Rate	8.63%	8.61%	8.96%
Number of Observations	8,984	8,293	491
<i>Sub-Sample: Black Population</i>			
Past Incarceration	8.8%		
Entrepreneurship	10.9%	10.4%	18.8%
Years of Education	12.35	12.47	11.37
ASVAB Ability Test	42.91	43.51	36.24
Age	28.03	28.03	28.08
Yearly Income in Dollars	19,193	20,340	9,810
Family Income in Dollars	60,022	63,229	37,460
Number of Months Worked	6.55	6.93	4.63
Local Unemployment Rate	8.63%	8.62%	8.71%
Number of Observations	2,335	2,077	165
<i>Sub-Sample: White Population</i>			
Past Incarceration	5.5%		
Entrepreneurship	12.1%	11.6%	20.5%
Years of Education	13.15	13.25	11.69
ASVAB Ability Test	64.16	65.02	50.51
Age	27.98	27.97	28.20
Yearly Income in Dollars	28,625	29,215	20,771
Family Income in Dollars	106,158	108,921	52,841
Number of Months Worked	7.74	7.83	7.18
Local Unemployment Rate	8.33%	8.30%	8.69%
Number of Observations	4,665	4,387	215

*Note: Individuals who are not included in the "Never Incarcerated" and "Formerly Incarcerated" groups are individuals who are currently incarcerated. Local Unemployment Rate is measured at the city/county level.

1.4 Methods

To study incarceration and entrepreneurship, we conduct a series of OLS regression analyses. First, we estimate the probability that an individual engages in entrepreneurship as a function of former incarceration, race, and other control variables such as cognitive ability, education, and prior income through the main model:

$$Entrepreneurship_{it} = \alpha + \beta_1 Past\ Incarceration_{it} + \beta_2 X_{it} + \epsilon_{it}$$

where $Entrepreneurship_{it}$ represents whether survey respondent i engaged in entrepreneurship at year t for the period 1997-2015, $Past\ Incarceration_{it}$ measures whether respondent i was formerly incarcerated at time t , X_{it} is a vector of other individual level control variables, and ϵ_{it} is an error term. For this model, incarceration produces a shift in the probability of entrepreneurial engagement by β_1 percent.

While the results in Table 4 support our arguments, it is difficult to interpret this as the causal effect of incarceration on entrepreneurship. The key challenge here is that there is nonrandom selection of individuals into incarceration. In particular, some of the characteristics of formerly incarcerated individuals that place them at high risk of incarceration may also affect their likelihood of engaging in entrepreneurship. Any increase of entrepreneurship for formerly incarcerated individuals may be a function of preexisting traits of formerly incarcerated individuals (e.g., risk preference, entrepreneurial ability, poor interpersonal skills) instead of the “treatment” effect of incarceration itself (Kim, Aldrich, Keister 2006, Caspi et al. 1998, Fairlie 2002). Pager (2003) raises similar limitations of the difficulty of parsing out underlying mechanisms for studies on incarceration and subsequent employment outcomes. While researchers have offered numerous mechanisms that may explain the observed relationship between incarceration and employment such as the influence on social networks (Hagan 1993),

the loss of human capital (Becker 1975), institutional trauma (Parenti 1999), and legal barriers to employment (Dale 1976), it has been difficult to discern which of these causal mechanisms are at work. Therefore, in order to identify a causal relationship between incarceration and entrepreneurship and to establish an explanatory mechanism, this paper utilizes several research designs and a unique empirical setting.

First, we conduct fixed effects regression models. Following Western (2002), we include individual-level fixed effects to control for time-invariant, observed and unobserved, individual traits that may be correlated with incarceration and entrepreneurship. By including the individual fixed effects, time-invariant traits like cognitive ability, impulsivity, risk preferences, or fixed demographic characteristics like race and ethnicity are absorbed (Western 2002, Caspi et al. 1998, Fairlie 2002). We also include year fixed effects to capture any time trends and location fixed effects at the city/county-level to control for differences between regions.

In addition to fixed effects, we exploit a quasi-natural experiment provided by the staggered implementation of a policy shock and a triple-difference regression analysis. Specifically, we use the staggered enactment of a policy widely known as “Ban-the-Box”, a county/city and state-level law barring employers from examining job applicants’ criminal records until later in the hiring process. As of 2019, the “Ban-the-Box” policy has been adopted in 35 states, Washington D.C., and 170 cities and counties in the United States for public employers, spanning 21 years. Among these localities, 13 states, Washington D.C., and 18 cities and counties have extended their “Ban-the-Box” policy to private employers as well. While the “Ban-the-Box” policy for both private and public employers has a wider reach to the society and a larger impact on individuals with criminal records and incarceration experiences (Rose 2017), due to the limited adoption of “Ban-the-Box” policy for private employers before 2015 our

analysis focuses primarily on the effects of implementing at least a public “Ban-the-Box” policy. This results in 18 states and 133 counties/cities that implement the public “Ban-the-Box” policy. We expect to find similar results for the adoption of “Ban-the-Box” policy for both public and private employers, yet with a greater economic significance. We address this again in the Discussion section.

We are able to leverage the staggered adoption of the “Ban-the-Box” policy to identify a causal mechanism of incarceration on entrepreneurship for several reasons. First, the implementation of this policy exogenously increases employment opportunities for formerly incarcerated individuals in impacted localities. The “Ban-the-Box” policy prohibits employers from conducting criminal background checks or inquiring about criminal histories until later in the hiring process – typically at the time of the conditional job offer. The rationale behind deferring access to this information is that the initial assessment of job applicants will occur without the stigma of a criminal record, ultimately improving employment odds for those with records. Scholars have found supportive evidence that despite employers’ initial reluctance to hiring individuals with criminal records, personal contact helped them see past criminal stereotypes and judge applicants based on their qualifications and true disposition (Pager et al. 2009, Craigie 2020). Thus, we expect the implementation of “Ban-the-Box” policy to reduce the discrimination that individuals with criminal records, and more narrowly formerly incarcerated individuals, face from employers. Past work finds evidence that the “Ban-the-Box” initiative provides a better chance at employment by removing the conviction history question for both job applicants with criminal records (e.g., Agan and Starr 2018, Rose 2019) and formerly incarcerated applicants (Craigie 2020, Avery and Hernandez 2018, Shoag and Veuger 2016). We discuss the potential mismatch between the “Ban-the-Box” policy that applies more broadly to

all individuals with criminal records and our paper that focuses on the subset of individuals with incarceration experience further below in the Methods section and the Discussion section.

Specifically in our paper, we are able to identify whether labor market discrimination plays a role in formerly incarcerated individuals engaging in entrepreneurship, by comparing the level of entrepreneurship engagement in localities with and without the “Ban-the-Box” policy. We expect to find lower entrepreneurship rates for formerly incarcerated individuals when “Ban-the-Box” policy is implemented in the jurisdiction of residence, because of the increased employment opportunities for formerly incarcerated individuals in that jurisdiction. Furthermore, we are able to identify the differences by race, as “Ban-the-Box” policy is often presented as an important tool for reducing racial disparity by improving access to employment for formerly incarcerated black men (Pinard 2014, Clarke 2012). We find supportive evidence from our sample that the enactment of the “Ban-the-Box” policy does in fact increase employment for formerly incarcerated individuals, particularly black formerly incarcerated individuals, as will be discussed in the Results section of the paper (refer to Table 4 and Figure 1).

Moreover, the implementation of the “Ban-the-Box” policy offers a unique setting to tease apart the causal mechanism of the effect of incarceration on entrepreneurship. The adoption of “Ban-the-Box” policy has no direct correlation with entrepreneurship, other than through the policy’s impact on labor market discrimination for formerly incarcerated individuals. The “Ban-the-Box” policy does not affect other possible causal mechanisms such as social networks, loss of human capital, or institutional trauma that are known to influence formerly incarcerated individuals in their labor market choices. In other words, the adoption of the “Ban-the-Box” law serves as a unique proxy for the change (i.e., decrease) in the level of employer discrimination for formerly incarcerated individuals in a given locality after the adoption of the ban.

We also exploit the variation in the timing of “Ban-the-Box” implementation in a triple difference design, to address the concern of whether the adoption of the “Ban-the-Box” policy is a function of a locality’s entrepreneurship rate, employment rate, or other unobservable traits. Our triple difference regression model mitigates such concerns, as we compare the changes in entrepreneurship for formerly incarcerated individuals relative to the changes in entrepreneurship for non-formerly incarcerated individuals, in “Ban-the-Box” localities versus non “Ban-the-Box” localities, after “Ban-the-Box” policies go into effect. We further validate that the treatment (“Ban-the-Box” implemented) and control (non “Ban-the-Box” implemented) localities had no preexisting trends in entrepreneurship or employment for formerly incarcerated and non-formerly incarcerated individuals before the year of policy adoption, suggesting that adoption of “Ban-the-Box” policy was not an endogenous choice based on entrepreneurship or employment trends (refer to Figure 1 & Figure 2).

Specifically, we run a triple difference regression by using the model:

$$\begin{aligned} Entrepreneurship_{it} = & \\ & \alpha + \beta_1 Past\ Incarceration_{it} + \beta_2 Ban\ the\ Box_{it} \\ & + \beta_3 Past\ Incarceration_{it} * Ban\ the\ Box_{it} + c_i + c_t + c_{region} + \beta_4 X_{it} + \epsilon_{it} \end{aligned}$$

where $Entrepreneurship_{it}$ represents whether survey respondent i engaged in entrepreneurship at year t for the period 1997-2015, $Past\ Incarceration_{it}$ measures whether respondent i was formerly incarcerated at time t , $Ban\ the\ Box_{it}$ is 1 when the county or state of residence for respondent i at time t has adopted the “Ban-the-Box” policy and 0 otherwise, $Past\ Incarceration_{it} * Ban\ the\ Box_{it}$ is the interaction of prior incarceration and the enactment of “Ban-the-Box” policy, c_i, c_t, c_{region} are fixed effects at the individual-level, year-

level, and county/city level respectively, X_{it} is a vector of time-variant control variables, and ϵ_{it} is an error term.⁶

Although our methodology of utilizing the triple difference method before and after a quasi-exogenous policy shock addresses most endogeneity problems, there is a possible limitation of using the “Ban-the-Box” policy as a change to employer discrimination for formerly incarcerated individuals. “Ban-the-Box” policy applies to the broader population of individuals with criminal records, while the main focus of our study is the subset of individuals with criminal records who have been formerly incarcerated in jails or prisons. Some individuals with criminal records have never spent time in prison, serving sentences under felony probation or less severe sanctions such as fines (Shannon et al. 2017). This suggests a potential mismatch between the group of individuals impacted by “Ban-the-Box” policy (individuals with criminal records) and the treatment group in this study (formerly incarcerated individuals), implying that some individuals in the control group (non-formerly incarcerated individuals with criminal records) will also experience the same impact from the “Ban-the-Box” policy as the treatment group (formerly incarcerated individuals).

However, this potential mismatch does not distort the interpretation of our results for three reasons. First, our study measures past incarceration as spending time not only in prisons but also jails, thus minimizing the number of formerly incarcerated individuals that are counted as non-formerly incarcerated. Second, if there are non-formerly incarcerated individuals with criminal records in the control group who are also impacted by “Ban-the-Box” policy, this would dampen the treatment effect of prior incarceration on entrepreneurship by making our statistical results underestimate the actual treatment effect. Thus, this type of mismatch would conflate the

⁶ The triple difference specification follows Imbens and Wooldridge (NBER 2007).

standard errors and bias the coefficients of prior incarceration to zero. Lastly, many employer surveys such as Holzer, Raphael, and Stoll (2006) show that employers are more concerned about hiring individuals who were formerly incarcerated compared to individuals with criminal records yet no incarceration experience. This suggests that those most affected by the “Ban-the-Box” policy are individuals with incarceration experiences, more so than individuals with criminal records yet no incarceration experience. Yet, we still interpret our results with caution and are alert to the potential disconnect between incarceration and criminal records. We address this further in the Discussion section.

1.5 Results

Table 3 shows the results on how incarceration affects entrepreneurship. The main finding is that formerly incarcerated individuals are more likely to become entrepreneurs compared to individuals who have never been to prison. The results show that having been formerly incarcerated increased one’s likelihood of becoming an entrepreneur by 5.9 percent (Table 3 Model 1). This is true controlling for individual characteristics such as education, cognitive ability test scores, family and individual income (t-1), number of months employed (t-1), gender, and race (Table 3 Model 2). While the average individual who has never been to prison has a 7.09 percent likelihood of becoming an entrepreneur, similar individuals with a criminal record are more than 50 percent more likely to enter entrepreneurship with a 12.49 percent likelihood of becoming an entrepreneur (Table 3 Model 2). Table 4 Model 3 shows similar results when adding individual fixed effects, which implies that prior incarceration increases one’s likelihood of entrepreneurship controlling for both observable and non-observable time-invariant individual characteristics. We find consistent results when

operationalizing entrepreneurship based on a narrower definition, as incorporated self-employment (Table 3 Model 4) and self-employment with employees (Table 3 Model 5).

Table 1.3: Unstandardized Coefficients from OLS Regression of Entrepreneurship on Incarceration

	Dependent Variable				
	Entrepreneurship (Self Employment)			Incorporated Self Employment	Self Employment with Employees
	(1)	(2)	(3)	(4)	(5)
Past Incarceration	0.059*** (0.004)	0.054*** (0.005)	0.035*** (0.007)	0.009*** (0.002)	0.023*** (0.004)
Ln(Years of Education)		-0.025*** (0.006)	0.015* (0.007)	0.006** (0.002)	-0.002 (0.003)
Ln(Yearly Income) (t-1)		-0.012*** (0.001)	-0.010*** (0.001)	0.001*** (0.000)	-0.002*** (0.000)
Ln(Family Income) (t-1)		0.001* (0.001)	0.003*** (0.001)	0.001*** (0.000)	0.001*** (0.000)
Number of Months Worked (t-1)		0.005*** (0.000)	0.004*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Local Unemployment Rate		0.003*** (0.001)	0.001** (0.000)	0.000 (0.000)	0.000+ (0.000)
Female		-0.021*** (0.002)			
Black		-0.007** (0.002)			
Hispanic		-0.019*** (0.003)			
Asian		-0.025*** (0.006)			
Mixed Race		-0.011 (0.008)			
ASVAB Test		0.000*** (0.000)			
Individual FE	N	N	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
Location FE	Y	Y	Y	Y	Y
N	140814	140814	140814	140814	140814
adj. R-sq	0.041	0.046	0.397	0.211	0.305

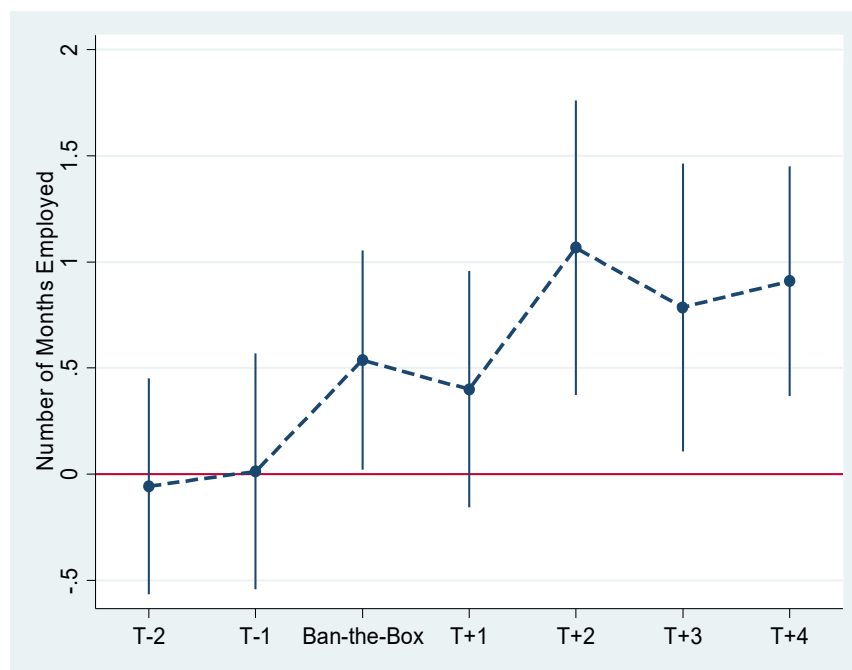
* Note: All models exclude observations of individuals who are currently incarcerated at time t. Local Unemployment Rate and Location Fixed Effects are at the city/county level. Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Table 4 and Table 5 show the triple difference analyses with the staggered implementation of the “Ban-the-Box” policy. Through the results we are able to make a causal claim, and also shed light on an underlying mechanism of why formerly incarcerated individuals choose entrepreneurship at higher rates compared to individuals who have not been to prison or jail. First, in Table 4 we test the effects of the “Ban-the-Box” policy on employment for formerly incarcerated individuals, by examining the number of months employed per year in the paid-employment sector. Based on the averages generated by Model 1 (Table 4), while the average individual who has never been incarcerated works in paid employment for 7.18 months in a year, past incarceration decreases employment by 0.52 months (7.2 percent) after release (Table 4 Model 1). However, the negative impact of incarceration on employment is mitigated when “Ban-the-Box” policy is implemented, as employment for formerly incarcerated individuals increase by 0.4 months in states or counties/cities where the policy is adopted (Table 4 Model 1). This is similar to the descriptive means that we find in Table 2 and Table 3. Thus, formerly incarcerated individuals still face discrimination from employers when residing in jurisdictions with “Ban-the-Box” policy, but they have greater employment compared to before the implementation of “Ban-the-Box” policy.

Figure 1 summarizes the effect of “Ban-the-Box” policy on employment for formerly incarcerated individuals. The solid horizontal line represents the baseline employment of formerly incarcerated individuals in jurisdictions that never implement “Ban-the-Box” policy. The dashed line shows employment for formerly incarcerated individuals in jurisdictions that implement “Ban-the-Box” policy at time T (labeled “Ban-the-Box”). Each vertical line shows the 95% confidence intervals. The figure shows that the two lines overlap during T-2 and T-1, confirming that “Ban-the-Box” policy was indeed exogenous without any pre-trends between the

counties/cities and states that implemented and did not implement “Ban-the-Box” policy. Also, Figure 1 shows that at time T, when “Ban-the-Box” policy is implemented, employment for formerly incarcerated individuals sharply increased in counties/cities and states that implement Ban-the-Box. This increase of employment for formerly incarcerated individuals in “Ban-the-Box” implemented jurisdictions continues after time T. These results suggest that (1) “Ban-the-Box” policy implementation is an exogenous shock to employment for formerly incarcerated individuals, and that (2) “Ban-the-Box” policy helps mitigate labor market discrimination for formerly incarcerated individuals.

Figure 1.1: Employment Trend of Formerly Incarcerated Individuals Before and After “Ban-the-Box” Policy Implementation



*Note: The dashed line shows the relative number of months employed for formerly incarcerated individuals in states and cities/counties where Ban-the-Box was implemented in year T0, compared to the baseline (solid horizontal line normalized to zero) which represents the employment of formerly incarcerated individuals in states and counties where Ban-the-Box was not implemented. The vertical lines represent 95% confidence intervals. The figure shows the employment trend of formerly incarcerated individuals in Ban-the-Box states and cities/counties relative to formerly incarcerated individuals in non Ban-the-Box states and cities/counties.

Table 1.4: Unstandardized Coefficients from OLS Regression of Number of Months in Paid-Employment on Incarceration and Ban-the-Box Policy Implementation

	Dependent Variable		
	Number of Months in Paid-Employment		
	(1)	(2)	(3)
	Full Sample	Sub-sample by Race	
		Black	White
Past Incarceration	-0.523*** (0.097)	-0.838*** (0.166)	-0.488** (0.162)
Ban-the-Box	0.055 (0.049)	-0.218* (0.091)	0.070 (0.068)
Past Incarceration * Ban-the-Box	0.398* (0.201)	0.847** (0.317)	0.030 (0.332)
Ln(Years of Education)	2.296*** (0.112)	2.014*** (0.230)	2.704*** (0.154)
Ln(Yearly Income) (t-1)	0.731*** (0.012)	0.606*** (0.022)	0.811*** (0.017)
Ln(Family Income) (t-1)	0.054*** (0.009)	0.120*** (0.015)	-0.004 (0.014)
Local Unemployment Rate	-0.055*** (0.008)	-0.104*** (0.018)	-0.037** (0.012)
Individual Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
Location Fixed Effects	Y	Y	Y
N	135583	35798	67710
adj. R-sq	0.452	0.479	0.438

* Note: All models exclude observations of individuals who are currently incarcerated at time t. Local Unemployment Rate and Location Fixed Effects are at the city/county level. Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Furthermore, we find differential effects of incarceration and “Ban-the-Box” policy by race. We divide the sample into black and white population in order to examine how past incarceration and “Ban-the-Box” policy affects employment opportunities differently by race. Models 2 and 3 of Table 4 show that black formerly incarcerated individuals face greater discrimination from employers compared to white formerly incarcerated individuals, supporting

previous findings (Pager 2003). Specifically, our regression results show that while the average black individual without a criminal record works in paid employment for 6.55 months in a year, black formerly incarcerated individuals are employed 0.83 months (12.7 percent) less (Table 4 Model 2). The average white individual without a criminal record works in paid employment for 7.46 months in a year, and a criminal record decreases employment by 0.49 months (6.6 percent) (Table 4 Model 2). These results are similar to the descriptive sample means from Table 2 and Table 3. Interestingly, the adoption of “Ban-the-Box” mitigates such employment discrimination for black formerly incarcerated individuals, but does not significantly increase employment for white formerly incarcerated individuals.⁷ Thus, the “Ban-the-Box” policy has the greatest positive employment impact on the individuals who face the greatest discrimination from employers: black formerly incarcerated individuals.

Table 5 shows the triple difference OLS result for entrepreneurship, where evidence for our causal mechanism is indicated by lower entrepreneurship rates for formerly incarcerated individuals after “Ban-the-Box” is adopted. Table 5 Model 1 provides consistent results as Table 3, showing that past incarceration increases one’s likelihood of engaging in entrepreneurship by 4.9 percent, compared to non-formerly incarcerated individuals. Yet, the coefficient for the interaction of *Past Incarceration* and *Ban-the-Box* indicates that the exogenous implementation of “Ban-the-Box” does not significantly change the overall incarceration effect on the likelihood of entrepreneurial entry.

In order to probe deeper, we conduct sub-sample analyses by race (Table 5 Model 2 and Model 3). The sub-sample analyses show that formerly incarcerated individuals are less likely to

⁷ We find that “Ban-the-Box” policy negatively impacts non-formerly incarcerated black individuals, by decreasing their employment. This result speaks to prior research on “Ban-the-Box” employment effects such as Agan and Starr (2017) and Doleac and Hansen (2017). We discuss further in the Discussion section of this paper.

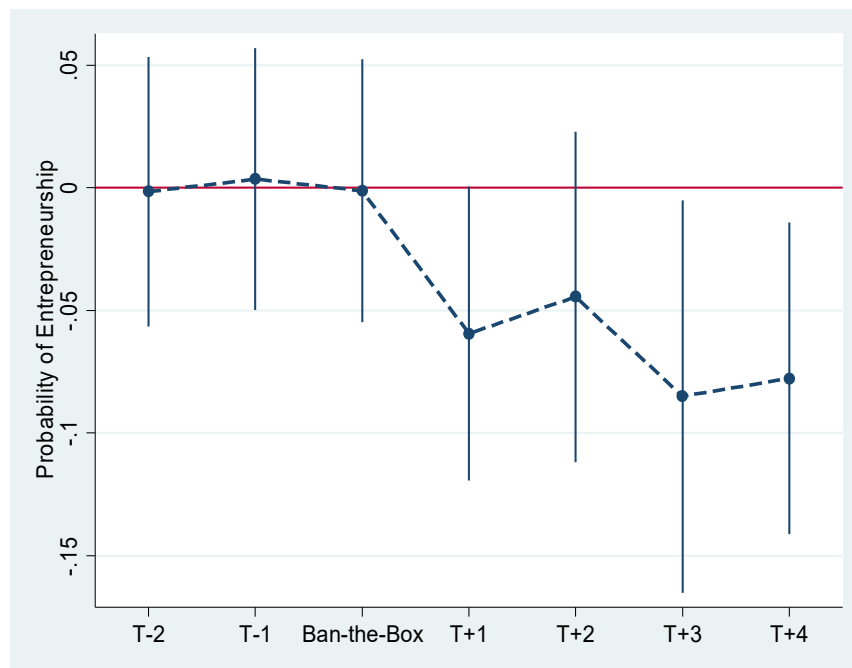
take part in entrepreneurship when “Ban-the-Box” policy is adopted, but only for the black formerly incarcerated population. This is consistent with past scholarship, as well as the results from Table 5 which show evidence that not only are black formerly incarcerated individuals the most discriminated against in the labor market, but also experience the greatest increase in labor market opportunities through “Ban-the-Box.” Overall, the results from Table 5 show that black formerly incarcerated individuals, those who face the most discrimination from employers and the greatest employment benefits from Ban-the-Box, are less likely to take part in entrepreneurship when “Ban-the-Box” is implemented. This supports our central thesis that formerly incarcerated individuals are more likely to enter entrepreneurship as an alternative route in the face of severe labor market discrimination.⁸

Figure 2 clearly summarizes the effect of “Ban-the-Box” policy on entrepreneurship for formerly incarcerated individuals. The solid horizontal line at zero represents the baseline entrepreneurship likelihood of formerly incarcerated individuals in states and counties/cities that never implemented “Ban-the-Box” policy. The dashed line shows the relative entrepreneurship likelihood of formerly incarcerated individuals in states and counties/cities that implement “Ban-the-Box” policy at time T (labeled “Ban-the-Box”). The vertical lines represent the 95% confidence intervals. Similar to Figure 1, Figure 2 shows that the two lines overlap during T-2, T-1, confirming that “Ban-the-Box” policy is indeed exogenous without any pre-trends between the jurisdictions that implemented and did not implement “Ban-the-Box” policy. Also, Figure 2 shows that at time T+1, a year after “Ban-the-Box” policy is implemented, entrepreneurship for formerly incarcerated individuals sharply decreases in counties and states that implement Ban-

⁸ We interpret the increase of entrepreneurship for non-formerly incarcerated black individuals after “Ban-the-Box” policy implementation to be the impact of “Ban-the-Box” policy decreasing employment for this population. This is in line with our overall theory that individuals are pushed into entrepreneurship due to the lack of work opportunities in the labor market.

the-Box. This decrease of entrepreneurship for formerly incarcerated individuals in “Ban-the-Box” implemented jurisdictions continues on after time T+1. These results show support for our hypotheses that formerly incarcerated individuals transition into entrepreneurship because of labor market discrimination, and that the mitigation of discrimination negatively impacts entrepreneurial entry.

Figure 1.2: Entrepreneurship Trend of Formerly Incarcerated Individuals Before and After “Ban-the-Box” Policy Implementation



* Note: The dashed line shows the relative probability of entrepreneurship for formerly incarcerated individuals in states and cities/counties where Ban-the-Box was implemented in year T0, compared to the baseline (solid horizontal line normalized to zero) which represents the probability of entrepreneurship of formerly incarcerated individuals in states and counties where Ban-the-Box was not implemented. The vertical lines represent 95% confidence intervals. The figure shows the entrepreneurship trend of formerly incarcerated individuals in Ban-the-Box states and cities counties relative to formerly incarcerated individuals in non Ban-the-Box states and cities/counties.

Table 1.5: Unstandardized Coefficients from OLS Regression of Entrepreneurship on Incarceration and Ban-the-Box Policy Implementation

	Dependent Variable		
	Entrepreneurship (Self-employment)		
	(1)	(2)	(3)
	Full Sample	Sub-sample by Race	
		Black	White
Past Incarceration	0.049*** (0.007)	0.043*** (0.012)	0.052*** (0.012)
Ban-the-Box	0.004 (0.004)	0.017** (0.007)	0.003 (0.005)
Past Incarceration * Ban-the-Box	0.017 (0.016)	-0.048* (0.024)	0.023 (0.028)
Ln(Years of Education)	0.001 (0.007)	0.013 (0.014)	-0.008 (0.010)
Ln(Yearly Income) (t-1)	-0.010*** (0.001)	-0.006*** (0.001)	-0.011*** (0.001)
Ln(Family Income) (t-1)	0.002*** (0.001)	-0.000 (0.001)	0.004*** (0.001)
Number of Months Worked (t-1)	0.004*** (0.000)	0.005*** (0.000)	0.004*** (0.000)
Local Unemployment Rate	0.000 (0.001)	0.004** (0.001)	-0.000 (0.001)
Individual Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
Location Fixed Effects	Y	Y	Y
N	135583	35798	67710
adj. R-sq	0.355	0.374	0.360

* Note: All models exclude observations of individuals who are currently incarcerated at time t. Local Unemployment Rate and Location Fixed Effects are at the city/county level. Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Next, Table 6 shows the results on how past incarceration and entrepreneurship affects annual income in dollars. Table 6 Model 1 first shows that incarceration has a significant negative impact on yearly income. Specifically, in terms of yearly income in dollars, formerly incarcerated entrepreneurs earn approximately 2,200 dollars more than formerly incarcerated employees. Furthermore, while formerly incarcerated employees earn approximately 8,600 dollars less than employees who have never been incarcerated each year, formerly incarcerated entrepreneurs earn 5,600 dollars less each year than entrepreneurs who have never been incarcerated.⁹ Thus although formerly incarcerated individuals still earn significantly less than non-formerly incarcerated individuals in entrepreneurship, the income penalty from past incarceration decreases by 35 percent. Table 6 Model 2 and Model 3 show consistent results for the sub-samples by race. These results support our argument that the income penalty that formerly incarcerated individuals face due to labor market discrimination and stigma can be mitigated by taking part in entrepreneurship. For robustness, we test and find consistent results with logged yearly income, logged hourly pay rate, and net worth.

Lastly, Table 7 shows results for the effect of entrepreneurship on recidivism rates for formerly incarcerated individuals. We find supportive evidence that entrepreneurship helps prevent formerly incarcerated individuals from returning to prison, beyond the effect of employment. Model 1 of Table 7 shows that entrepreneurship decreases the likelihood of recidivism (measured by re-incarceration) by 5.3 percent, which is a 32.5 percent decrease from the average recidivism rate for similar formerly incarcerated individuals who are employees. Model 1 supports previous research with results that show longer incarceration length increases recidivism while the number of years since release from incarceration decreases recidivism. The

⁹ The results are similar when using 3-year average income and logged yearly income.

sub-sample analyses by race suggests that entrepreneurship reduces recidivism rates, but only for black formerly incarcerated individuals (Table 7 Model 2 and Model 3). This is consistent with our theory that entrepreneurship is most helpful as an alternative route for work for those facing the most discrimination in the labor market: black formerly incarcerated individuals. Table 8 Model 4 shows consistent results with Model 1, by alternatively measuring recidivism as re-arrests (Uggen 2000).

Table 1.6: Unstandardized Coefficients from OLS Regression of Yearly Income on Incarceration and Entrepreneurship

	Dependent Variable		
	Yearly Income in Dollars		
	(1) Full Sample	(2) Sub-sample by Race Black	(3) White
Past Incarceration	-8586.174*** (351.277)	-6767.689*** (383.735)	-6512.958*** (468.748)
Entrepreneurship	-776.466*** (210.427)	-929.227** (353.921)	-1127.093*** (284.607)
Past Incarceration * Entrepreneurship	2957.925** (915.426)	1849.050+ (1009.618)	3688.572** (1328.286)
Ln(Years of Education)	34807.082*** (602.353)	29568.929*** (984.791)	33901.349*** (722.403)
Number of Months Worked	836.301*** (13.120)	578.955*** (17.640)	803.352*** (17.094)
Local Unemployment Rate	-82.692* (36.600)	-249.590*** (55.586)	-54.865 (48.551)
Individual Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y
Location Fixed Effects	Y	Y	Y
N	121026	38745	75876
adj. R-sq	0.617	0.602	0.630

* Note: All models exclude observations of individuals who are currently incarcerated at time t. Local Unemployment Rate and Location Fixed Effects are at the city/county level. Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

**Table 1.7: Unstandardized Coefficients from OLS Regression of
Recidivism on Entrepreneurship**

	Dependent Variable			
	Recidivism (Re-incarceration)			Re-arrest
	(1)	(2)	(3)	(4)
	Full Sample	Sub-sample by Race Black	White	Full Sample
Entrepreneurship	-0.053*** (0.012)	-0.061* (0.024)	0.003 (0.016)	-0.064*** (0.016)
Years Since Release from Incarceration	-0.038*** (0.002)	-0.047*** (0.003)	-0.035*** (0.002)	0.005* (0.002)
Number of Years Incarcerated	0.046*** (0.005)	0.014* (0.007)	0.075*** (0.009)	0.033*** (0.005)
Ln(Yearly Income) (t-1)	0.001 (0.004)	0.011 (0.007)	-0.005 (0.006)	-0.011* (0.005)
Ln(Years of Education)	-0.028 (0.043)	0.121 (0.088)	0.052 (0.059)	-0.055 (0.055)
Number of Months Worked (t-1)	-0.002+ (0.001)	-0.000 (0.002)	-0.004* (0.002)	-0.002+ (0.001)
Ln(Family Income) (t-1)	0.007* (0.003)	0.003 (0.004)	0.002 (0.005)	0.001 (0.003)
MSA Unemployment Rate	0.006+ (0.003)	-0.004 (0.006)	0.012** (0.005)	-0.001 (0.004)
Individual Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
MSA Fixed Effects	Y	Y	Y	Y
N	7243	2436	3114	7243
adj. R-sq	0.326	0.392	0.457	0.217

* Note: This sample includes only formerly incarcerated individuals. All models exclude observations of individuals who are currently incarcerated or unemployed at time t. Local Unemployment Rate and Location Fixed Effects are at the city/county level. Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

1.6 Discussion & Future Directions

We find that people who have spent time in prison are more likely to become entrepreneurs compared to similar individuals who have not been incarcerated, suggesting entrepreneurship as a meaningful alternative for formerly incarcerated individuals. Through our quasi-experiment design, we verify an underlying mechanism that formerly incarcerated individuals enter entrepreneurship because there are diminished employment opportunities in the labor market. In addition, we find evidence that entrepreneurship offers formerly incarcerated individuals the chance to mitigate both economic and social barriers to successful reentry by decreasing the income gap and recidivism rates.

These findings suggest a modification to a prevailing narrative on formerly incarcerated individuals, which emphasizes labor market discrimination and its adverse consequences on subsequent reentry. Consistent with this narrative, we verify past scholarship that points to the value of employment. However, we extend this research by drawing attention to entrepreneurship as an alternative labor market route that formerly incarcerated individuals can pursue to mitigate the stigma associated with the mark of a criminal record. And while not the primary labor market option for formerly incarcerated individuals, there are positive returns to entrepreneurship. Entrepreneurship not only helps formerly incarcerated people find work and gain competitive income, but also lowers the likelihood of returning to prison. While employment remains a key channel to successful reentry, we introduce entrepreneurship as an alternative way formerly incarcerated people can achieve both economic and social reintegration.

Our study speaks to the important discussion on the intersection of race and incarceration by underlining the significance of race in the role of entrepreneurship for formerly incarcerated people (Pager 2003, Pettit and Western 2004, see also Hirschman and Garbes 2020). Our results

support prior research on the persistent racial inequality in employment opportunities for formerly incarcerated individuals by showing that African American (black) individuals who have been incarcerated are those who face the highest employment barriers. Yet, our findings that black formerly incarcerated individuals reap the greatest advantages from entrepreneurship, emphasizes that entrepreneurship offers an opportunity for economic and social integration, particularly for those who face the greatest stigma and discrimination in the traditional labor market - African Americans.

Our quasi-experimental study design allows us to disentangle the underlying mechanism and offer direct causal evidence of incarceration on entrepreneurship. While survey research can have limitations of indirect estimates of effects, our research design utilizes an exogenous policy shock with a triple-difference method. This allows a direct and causal measure of incarceration and labor market discrimination as a mechanism that drives entrepreneurial decisions. This methodology allows us to effectively isolate the institutional effect from the individual effect of incarceration and identify entrepreneurship as a response to labor market discrimination and stigma.

Addressing this important channel of reentry for formerly incarcerated individuals not only contributes to research but also has implications for policymakers and practitioners. Examining entrepreneurship as a valid opportunity for formerly incarcerated individuals may draw attention to the importance of investing in programs and policies to facilitate post-incarceration entrepreneurial activities, as well as better understand the ongoing discrimination in employment markets. As many studies have found that the lack of employment influences formerly incarcerated individuals to return to prison, this study draws attention to the potential of entrepreneurship to decrease recidivism. While there have been recent policy initiatives such as

the New Start Act (Marks 2019) and efforts from non-profit organizations and educational institutions, our research is the first to emphasize entrepreneurship and its relationship to labor market discrimination for formerly incarcerated people. Furthermore, the income implications of entrepreneurship

Relatedly, our paper has theoretical implications on public policies that affect people with disadvantages, such as a criminal record. For example, our research speaks to the discussion around the “Ban-the-Box” policy. Scholars, policy makers, and practitioners have debated the effects of the “Ban-the-Box” policy, with serious disagreement. While some have argued that “Ban-the-Box” policy increases discrimination against racial minorities (Agan and Starr 2018, Doleac and Hansen 2018), others have found counter evidence suggesting that this policy reduces discrimination (Craigie 2020, Pinard 2014, Southern Coalition for Social Justice 2013, Clarke 2012, and Community Catalyst 2013) or negligible effects (Rose 2019). While our research is not designed to assess the impact and effectiveness of the “Ban-the-Box” policy, we offer some findings that relate to this conversation. In our study, we are able to observe formerly incarcerated individuals before and after “Ban-the-Box” policy enactments, which has been difficult in audit studies with fictitious job applicants (Agan and Starr 2018) and Current Population Survey studies that don’t report incarceration variables (Doleac and Hansen 2018). By being able to separately observe formerly and non-formerly incarcerated individuals after “Ban-the-Box” policy, we are able to more accurately assess the policy implications for each different group. We found (in Table 4) that “Ban-the-Box” increases employment for formerly incarcerated individuals (both black and white), and that “Ban-the-Box” has a significant negative effect on the employment outcomes of African Americans who have not been incarcerated. While this finding is a result of our specific sample, research design, and

measurement of employment (number of months employed), our findings suggest the need for more studies to investigate the impact of “Ban-the-Box” policies on both formerly incarcerated and non-formerly incarcerated individuals. Furthermore, as our study examines individuals with incarceration records rather than criminal records, future work on distinguishing the impact of “Ban-the-Box” policy on individuals with incarceration records and individuals with criminal records will be helpful in gaining a more comprehensive understanding.

This study also contributes to work on incarceration as one of the first papers to address entrepreneurship of formerly incarcerated people. While recent studies have started to examine entrepreneurship for formerly incarcerated individuals through qualitative analyses of entrepreneurial training programs in prisons (e.g., Cooney 2012), our study is the first study to offer quantitative analyses on entrepreneurial transitions and outcomes for formerly incarcerated individuals. We believe our research opens future research possibilities on formerly incarcerated entrepreneurs. For example, scholars should examine the entrepreneurial process of formerly incarcerated individuals and how the entrepreneurial experience of formerly incarcerated people impacts their future employment prospects.

A growing number of individuals are returning back to society from prisons and jails as a consequence of mass incarceration. Thus, it becomes increasingly important to consider the impact of incarceration on reentry and how formerly incarcerated individuals can overcome the common pathway to unemployment and recidivism. Our paper is an initial attempt to introduce entrepreneurship as an alternative response to the poor employment outcomes from labor market discrimination that often await formerly incarcerated individuals. Future research is needed to expand this emphasis on entrepreneurship by exploring the antecedents, process, and diverse outcomes of entrepreneurship for formerly incarcerated individuals. In this way, we can move

toward a more complete understanding of the labor market choices that formerly incarcerated individuals can make in order to successfully reenter and remain in the society.

Essay 2: Entrepreneurship as a Bridge to Employment for Formerly Incarcerated People

2.1 Introduction

Entrepreneurship has become increasingly common as a career choice, with a significant portion of individuals starting their own business at some point in their career (Buchanan 2015). Yet most entrepreneurial experiences are but one spell within a career trajectory, where most entrepreneurs eventually transition back into wage employment (Burton, Sørensen, and Dobrev 2016, Hyytinen and Ilmakunnas 2007). In order to fully understand the long-term impact of entrepreneurship as a career choice, it is important to examine how entrepreneurial experience affects subsequent wage-employment outcomes. Recent research has started to explore this question on whether entrepreneurship experience hurts or benefits subsequent wage-employment outcomes (e.g., Botelho and Chang 2020, Kacperczyk and Younkin 2020, Ding, Lee, and Shapiro 2020), and has found that entrepreneurs face penalties in post-entrepreneurship wage-employment because of concerns regarding their lack of commitment or loyalty to wage-employment (Botelho and Chang 2020), lack of fit to wage-employment (Kaiser and Malchow-Møller 2011, Ding, Lee, and Shapiro 2020), and lack of positive credential on the individual's capability from prior employment (Koellinger et al. 2015, Kacperczyk and Younkin 2020).

The negative impact of entrepreneurship on subsequent wage-employment outcomes is largely grounded on an underlying assumption that individuals actively select into entrepreneurship due to individual preferences rather than the opportunity structure in the labor market. Yet a large portion of entrepreneurship is triggered by the lack of alternative employment opportunities or labor market discrimination (Lippman, Davis, and Aldrich 2005,

Burton, Sørensen, Dobrev 2016, Sørensen and Sharkey 2014, Yang and Kacperczyk 2018), and the impact of entrepreneurship on subsequent wage-employment for this population has yet to be explored. Therefore, this paper focuses on examining the effects of entrepreneurship on subsequent wage-employment outcomes for individuals who are pushed into entrepreneurship because of labor market discrimination. I argue that entrepreneurship provides advantages when returning to wage-employment for individuals who are pushed into entrepreneurship due to labor market discrimination, because (a) the concerns on commitment and fit to wage-employment is mitigated and (b) entrepreneurial experience provides a positive signal of ability and motivation.

Specifically, employers are known to penalize former entrepreneurs based on the assumption that individuals who actively choose to become entrepreneurs, despite opportunities in wage employment, are bad fits for employment (Ding, Lee, and Shapiro 2020) and less committed or loyal to employment (Botelho and Chang 2020). However, individuals who experience discrimination in the employment market are more likely to become entrepreneurs amid a lack of other employment opportunities, rather than by personal preference (Hwang and Phillips 2020, Conti, Kacperczyk, and Valentini 2017). Therefore, employers are less likely to penalize such ex-entrepreneurs based on concerns over lack of fit or commitment to wage-employment.

Furthermore, entrepreneurial experience can provide a positive credential or send a positive signal to employers for people from groups that are discriminated against. An aversion to such groups is based on the stigma or negative credentials connecting them to characteristics such as a lack of motivation, lack of skills, or untrustworthiness (Pager 2003, Sugie, Zatz, Augustine 2019, Holzer et al. 2004, Grogger 1992). Individuals from stigmatized groups are also more likely to lack other positive signals, such as education or reliable employment records, that

can offset negative credentials (Western 2002). Therefore, entrepreneurial experience, associated with higher responsibility, self-motivation, leadership, and broader skillsets (Rider et al. 2017, Kerr, Kerr, and Xu 2018), can be a positive signal to offset the stigma or negative credentials. Also, because individuals who are discriminated against generally face greater obstacles in becoming entrepreneurs, employers may evaluate the competency of these entrepreneurs more favorably, relative to entrepreneurs from less discriminated groups (Kacperczyk and YOUNKIN 2020, Ding, Lee, and Shapiro 2020). Thus, in this paper I argue that people who face labor market discrimination may benefit from entrepreneurial experience in post-entrepreneurship employment outcomes, because they are penalized less as bad fits for or less committed to wage-employment, and they have an advantage, since entrepreneurship signals higher worker motivation and competence.

This paper particularly focuses on a population that faces pervasive labor market discrimination in the United States: formerly incarcerated people. The United States is the world's leader in incarceration with 2.2 million people in the nation's prisons and jails as of year 2018, marking a 600 percent increase of penal population over the last 40 years (Bureau of Justice Statistics 2018). Despite the significant number of individuals who have been involved in the criminal justice system and are reentering society, formerly incarcerated people continue to face severe discrimination in the labor market (Petit and Western 2004, Pager 2003). In response to such labor market discrimination, recent work has found that formerly incarcerated individuals are pushed into entrepreneurship¹⁰ as an alternative career choice to find work and gainful income (Hwang and Phillips 2020). Thus, the formerly incarcerated population represent a group

¹⁰ I define entrepreneurship to involve organizing, operating, and assuming the risk of a new business venture (Aldrich, 1999; Casson, 2003). In this conception, entrepreneurs stand in contrast to employees, and thus entering entrepreneurship is a labor market transition: leaving employment with established organizations for self-employment, whether or not that involves employing others (Shane, 2003; Sorensen and Sharkey 2016).

of individuals who engage in entrepreneurship due to the lack of opportunities in the wage-employment sector, and examining how entrepreneurship impacts subsequent employment outcomes for this population helps us understand the long-term effect of entrepreneurship as a career choice for a broader group of discriminated individuals.

I test the propositions of this paper using public and restricted data drawn from the United States National Longitudinal Survey of Youth (NLSY97) from 1997 to 2015. The NLSY97 dataset offers detailed information on incarceration, employment, entrepreneurship, and income, allowing careful analyses of the effect of entrepreneurship and incarceration records on subsequent employment. I combined this with hand-collected data and National Employment Law Project data on the implementation of a policy that delays criminal background checks until later in the hiring process (“Ban-the-Box”). I took advantage of a quasi-experimental design of the staggered implementation of state and county/city level “Ban-the-Box” policy. In addition, I conducted in-depth interviews with currently incarcerated individuals in Arizona State Prison Complex, formerly incarcerated entrepreneurs and employees, and employers that hire formerly incarcerated people.

My results support the proposition that entrepreneurship benefits formerly incarcerated individuals in their post-entrepreneurship wage-employment outcomes, compared to formerly incarcerated individuals who have no entrepreneurial experience but similar years of work experience. Specifically, formerly incarcerated entrepreneurs experience 33% less unemployment before securing wage-employment than similar formerly incarcerated individuals without entrepreneurial experience, regardless of entrepreneurial performance. Thus, neither entrepreneurial success nor failure hurts subsequent employment likelihood for formerly incarcerated individuals. To probe more deeply into the mechanism by which formerly

incarcerated individuals benefit from entrepreneurial experience, I find that entrepreneurial experience provides the greatest benefits in securing wage-employment to formerly incarcerated individuals who are high school dropouts or racial minorities (Black and Hispanic formerly incarcerated individuals). Furthermore, while, on average, entrepreneurship has no significant effect on the likelihood of formerly incarcerated individuals finding higher paid jobs in wage-employment relative to formerly incarcerated employees, I find that having a successful entrepreneurial experience significantly boosts subsequent wage-employment income for formerly incarcerated entrepreneurs who are high school dropouts or racial minorities. These results suggest that entrepreneurial experience provides benefits to formerly incarcerated people by serving as a positive signal to employers, particularly when other positive credentials are absent or when the stigma is strongest.

Additionally, my findings help explain the pattern of entrepreneurial exit among formerly incarcerated entrepreneurs: Successful formerly incarcerated individuals are less likely to exit entrepreneurship than successful non-formerly incarcerated entrepreneurs, while unsuccessful formerly incarcerated entrepreneurs are more likely to exit from their entrepreneurial ventures than unsuccessful non-formerly incarcerated entrepreneurs, given the same level of entrepreneurial income. Thus, on the one hand, entrepreneurship is gainful for successful formerly incarcerated entrepreneurs by providing work and income during entrepreneurship, while, on the other hand, entrepreneurship is helpful for unsuccessful formerly incarcerated entrepreneurs because it offers higher future employability with minimal future wage penalty.

This paper provides implications for theory, empirical work, and policy. By showing that entrepreneurship provides advantages in post-entrepreneurship wage-employment outcomes for individuals who face labor market discrimination, this paper adds to recent research exploring

the long-term impact of entrepreneurship through post-entrepreneurship outcomes. My findings also highlight a societal benefit of entrepreneurship, as I find that entrepreneurship provides discriminated individuals a bridge back to or a road to employment opportunities. Furthermore, as one of the first studies to explore entrepreneurship for formerly incarcerated people, this paper speaks to the important discussion on the intersection of race and the criminal justice system by underlining the significance of race in the role of entrepreneurship for the formerly incarcerated. My findings that formerly incarcerated Black and Hispanic individuals reap the greatest advantages from entrepreneurship emphasize that entrepreneurship offers an opportunity for long-term economic and social integration, particularly for those who face the greatest stigma and discrimination in the traditional labor market. Finally, my research speaks to policy around entrepreneurship and employment for discriminated populations, providing implications that while resolving employer discrimination remains the main goal, entrepreneurship may be an alternative pathway to provide both short-term and long-term advantages to discriminated populations.

2.2 Prior Literature and Theory

2.2.1 Transitions from Entrepreneurship to Wage-Employment

Recently, scholars have started to recognize entrepreneurship as part of the career mobility and attainment process, as transitions between wage employment and entrepreneurship are becoming increasingly common (Burton, Sørensen, and Beckman 2002, Sørensen and Fassiotto 2011, Burton, Sørensen, and Dobrev 2016, Carnahan, Argawal, and Campbell 2012). Research in this vein has established how transitions between entrepreneurship and wage employment are comparable to movements within wage employment, and has focused on the

factors explaining the transition from wage-employment to entrepreneurship (Sørensen and Sharkey 2014, Kacperczyk and Marx 2016, Yang and Kacperczyk 2018, Hellmann 2007).

While such research has helped our understanding of the processes leading to entrepreneurship, most entrepreneurial experiences are but one spell within a career trajectory, where most entrepreneurs eventually transition back into wage employment (Burton, Sørensen, and Dobrev 2016, Hyttinen and Ilmakunnas 2007). Recent research has thus explored how entrepreneurship influences the transition back into wage employment, on whether entrepreneurship helps or deters future career attainment in the wage-employment market (e.g., Botelho and Chang 2020, Kacperczyk and Younkin 2020, Manso 2016). Studies have theorized and found that entrepreneurs are penalized in subsequent wage-employment outcomes relative to non-founders, because of concerns regarding their lack of commitment and loyalty to wage-employment (Botelho and Chang 2020), lack of fit to wage-employment (Kaiser and Malchow-Møller 2011, Ding, Lee, and Shapiro 2020), and increased uncertainty related to the individual's capability (Koellinger et al. 2015, Kacperczyk and Younkin 2020).

Research has shown that individuals choose to engage in entrepreneurship despite other wage-employment opportunities because of their preference, such as their preference for autonomy and control (Santarelli and Vivarelli 2007) flexibility (Thebaud 2015), and “being one's own boss” (Hamilton 2000). Employers thus consider entrepreneurs as less suitable to the structured, routinized, and hierarchical nature of wage-employment (Luzzi and Sasson 2016), as former entrepreneurs are “hard to tame” (Hamilton 2000) and are unable to work productively with other employees (Min 1984). In addition to the uncertainty around former entrepreneur's ability to fit into wage employment, entrepreneurial experience also raises questions on their commitment to remain in wage employment (Chatman 1991, Leung 2014). Researchers suggest

evidence that former entrepreneurs are more likely to leave wage employment to start a new venture compared to non-entrepreneurs (Hyytinen and Ilmakunnas 2007), and thus pose a flight risk to employers (Botelho and Chang 2020). Recently, Botelho and Chang (2020) found supportive empirical evidence that entrepreneurs are disadvantaged in future wage employment outcomes because employers “were concerned regarding whether former founders applying for wage employment could fit into and remain committed to the hiring firm.”

Yet research that has found a negative impact of entrepreneurship on transitions back to employment assumes that entrepreneurs consist of individuals who actively seek out entrepreneurship despite abundant labor market opportunities, by focusing on high-skilled and privileged populations such as STEM workers (Ding, Lee, and Shapiro 2020), software engineers (Botelho and Chang 2020), and HR and Marketing professionals (Kacperczyk and Younkin 2020). This preference-based selection into entrepreneurship will have consequences on the inferences that employers make from the entrepreneurial experience when hiring entrepreneurs. Yet, there is a group of entrepreneurs that is yet to be included in this on-going discussion: a large portion of entrepreneurs are pushed into entrepreneurship out of lack of other employment opportunities in the labor market or necessity (e.g., Sørensen and Sharkey 2014, Conti, Kacperczyk, and Valentini 2017). Thus, this paper explores how the effect of entrepreneurial experience on post-entrepreneurship wage-employment outcomes may differ for individuals pushed into entrepreneurship due to labor market discrimination and stigmatization.

2.2.2 Entrepreneurship for Discriminated Populations

Sociological approaches to entrepreneurship have emphasized the role of structural factors in shaping the decision to engage in entrepreneurship (North, 1990, Sørensen and Audia 2000, Hwang and Powell 2005, Sørensen 2007), particularly the opportunity structure of the

labor market (Aldrich 1999, Sørensen and Sharkey 2014, Burton et al. 2002, 2016). Scholars have claimed that entrepreneurship is intertwined with career options in paid employment, and thus employees choose to leave paid employment for entrepreneurship when entrepreneurial entry is more compelling than alternative career options (Sørensen and Sharkey 2014, Kacperczyk and Marx 2016, Yang and Kacperczyk 2018). Studies have found that individuals are more likely to engage in entrepreneurship when opportunities from paid employment are less appealing because of lower wages or jobs with lower prestige (Amit, Muller, Cockburn 1995, Hellmann 2007); fewer and less attractive outside options in the labor market (Sørensen and Sharkey 2014); fewer internal venture opportunities (Kacperczyk 2012); or fewer opportunities for promotion, lower wages, and fewer internal resources (Kacperczyk and Marx 2016).

Since the labor market opportunity structure has a profound influence on an individual's transition to entrepreneurship, scholars have suggested that discrimination in the labor market increases the likelihood that disadvantaged individuals will become entrepreneurs (Keister 2000). Lippman, Davis, and Aldrich (2005) argue that individuals engage in entrepreneurship when there are few, if any, other options for finding suitable work in the labor market. Thus, individuals who face blocked opportunities in the employment sector are pushed into entrepreneurship in an effort to secure work, income, and a source of upward mobility.

Accordingly, scholars have identified key population groups that, because of employment discrimination, engage in entrepreneurship as a source of economic and social mobility. These population groups include formerly incarcerated individuals (Hwang and Phillips 2020), women (Thébaud 2015, Yang and Kacperczyk 2018, Rosti and Chelli 2005), LGBTQ people (Conti, Kacperczyk, and Valentini 2017), immigrants (Waldinger, Ward, and Aldrich 1985; Min 1993; Light 1972), and racial minorities (Walstad and Kourilsky 1998). For example, Hwang and

Phillips (2020) find evidence that formerly incarcerated individuals are more likely to engage in entrepreneurship because of severe discrimination and stigmatizing on the part of employers.

Similarly, Conti, Kacperczyk, and Valentini (2017) examine how state-level anti-discrimination protections for LGBTQ people negatively affect statewide entrepreneurship levels, because paid employment becomes more appealing to prospective entrepreneurs.

2.2.3 Transitions to Wage-Employment for Entrepreneurs from Discriminated Populations

I argue that entrepreneurship will provide advantages in subsequent wage-employment outcomes for entrepreneurs who are pushed into entrepreneurship due to discrimination in the labor market. For these entrepreneurs, the disadvantages that ex-entrepreneurs face from the concerns of commitment and fit to wage-employment and uncertainty of work ability will be mitigated. At the same time, entrepreneurship will provide a positive signal to employers on worker quality and motivation, for those traditionally discriminated in the labor market.

First, the concerns of lack of commitment to wage-employment (Botelho and Chang 2020) and lack of fit to wage-employment (Kaiser and Malchow-Møller 2011, Ding, Lee, and Shapiro 2020) is mainly driven by the assumption that entrepreneurs prefer entrepreneurship over wage-employment (Åstebro, Chen, and Thompson 2011, Hamilton 2000). However, for entrepreneurs from a population that experiences severe discrimination and stigmatization from employers, entrepreneurship is more often a choice made because of the lack of opportunities in the labor market structure rather than individual preferences (Sorensen and Sharkey 2014). Thus, because entrepreneurs from a population that experiences severe employer discrimination are more likely to engage in entrepreneurship out of necessity rather than their (lack of) individual fit or commitment to wage-employment, employers are less likely to consider these entrepreneurs

as a bad fit for or less committed and loyal to wage-employment. Thus, the negative perception associated with former entrepreneurs as unsuitable and unreliable employees is mitigated.

Second, employers infer a potential employee's quality such as work-related skills, responsibility, and trustworthiness from previous employers (Bidwell and Fernandez-Mateo 2010, Phillips 2001). As former entrepreneurs lack prior employer affiliation, potential employers have greater difficulty validating the applicant's quality (Koellinger et al. 2015). Yet, for discriminated individuals, this concern of uncertainty of quality is mitigated because the comparison group of discriminated individuals without entrepreneurial experience are less likely to have reliable employment track records (Sugie 2018). Therefore, compared to the comparison group of discriminated individuals without entrepreneurial experience who lack positive credentials to signal work-related skills or responsibility, ex-entrepreneurs can use their entrepreneurial experience to signal their work-related skills or responsibility. Thus, the lack of prior employer affiliation is less detrimental for individuals who face severe employer discrimination and can provide additional information to employers.

Third, prior research has shown that entrepreneurship signals positive yet unobservable ability or skills to potential employers (Rider et al. 2017). Entrepreneurship has also been found to be a more reliable signal of true ability compared to employment (Hegde and Tumlinson 2017, Levine and Rubinstein 2017). Entrepreneurial experience can also signal greater stock of skills and experiences that potential employers may prefer (Botelho and Chang 2020), such as openness and alertness to new experiences, greater desire for achievement, and a wide array of skills and experiences (Kirzner 1979, Kerr, Kerr, and Xu 2018, Howard 2018, Ishak 2017, Wagner 2003, McClelland 1965). As individuals from discriminated populations face discrimination and aversion from employers based on the perception of lack of competence,

reliability, and motivation (Grogger 1992, Waldfogel 1994, Lott 1992), the positive signals of entrepreneurship which entail not only competence but motivation and responsibility will further improve the perception employers hold for entrepreneurs from discriminated populations. Furthermore, this effect will be particularly enhanced for discriminated populations that particularly lack other positive credentials.

Moreover, this positive signal will be enhanced for entrepreneurs from discriminated populations in two ways. An individual's success is more likely to be attributed to their competence when evaluators perceive the focal task as generally harder for the individual or a group of individuals with similar characteristics (e.g., Hansen and Hall, 1985, McClure, 1998, Kacperczyk and Younkin 2018). Thus, because individuals from discriminated populations face more substantial obstacles during entry or post-entry stage of entrepreneurship, and because they are perceived as a less natural fit for entrepreneurship, employers may evaluate such entrepreneurs more favorably. In other words, employers will attribute stronger competence and worker quality to entrepreneurs from discriminated populations, inferring their ability to overcome barriers to entrepreneurial entry.

Given these mechanisms, I hypothesize that discriminated individuals with entrepreneurial experience will benefit in terms of subsequent employment outcomes, compared to discriminated individuals who have no entrepreneurial experience. Entrepreneurship will allow individuals who are discriminated in the labor market to signal both competence and responsibility to employers, without the concerns of being perceived as bad fits or less committed to wage-employment. Given this mechanism, I further hypothesize that this benefit from entrepreneurial experience will be particularly pronounced for the those who face the greatest discrimination in the labor market.

2.3 Empirical Context: Formerly Incarcerated Population in the United States

The United States has the world's largest incarcerated population with 2.2 million people in the nation's prisons and jails as of year 2018, with more than 600,000 people returning to the society every year (Bureau of Justice Statistics 2018). Despite the significant number of individuals who have been in contact with the criminal justice system, formerly incarcerated people continue to face severe discrimination in the labor market. As of 2018, formerly incarcerated people suffer from an unemployment rate of 27.3% compared to 5.8% for the general public (Prison Policy Initiative 2018). Formerly incarcerated individuals are not only less likely to be hired by employers, but those who are hired earn lower wages and experience less wage mobility (Petit and Western 2004, Pager 2003, Western 2002).

One of the key factors for such negative employment outcomes for formerly incarcerated people is employer discrimination based on the stigma associated with a criminal record (e.g., Pager 2003). Employers consider a criminal record as a “negative credential” signaling low worker quality (Grogger 1992), untrustworthiness (Waldfogel 1994), and lack of honesty (Lott 1992), and thus are less likely to hire formerly incarcerated individuals than comparable job applicants without a criminal record (Western 2002, Uggen et al. 2014, Holzer, Raphael, and Stoll 2003). There are also additional individual level mechanisms through which incarceration negatively affects subsequent employment, such as erosion of human and social capital (Kling 1999, Hagan 1993, Harding, Morenoff, and Wyse 2019). A series of recent audit experiments have found that the negative stigma attached to a criminal record remains the main driver of adverse employment opportunities, showing 50% reduced “callback” rates for individuals with criminal records compared to identical individuals without a criminal record (Pager 2003, 2007, Pager, Western, and Bonikowski 2009, Uggen et al. 2014).

In response to such continued discrimination in paid employment, recent work has highlighted entrepreneurship as an alternative career choice that formerly incarcerated individuals seek in the face of severe employment discrimination (Hwang and Phillips 2020). Hwang and Phillips (2020) find that formerly incarcerated individuals are pushed into entrepreneurship by the lack of employment opportunities in the paid-employment sector. Specifically, formerly incarcerated people are 50% more likely than individuals who have never been incarcerated to become entrepreneurs, and the level of entrepreneurial engagement for formerly incarcerated individuals decreases with the mitigation of employment discrimination against them. Furthermore, the authors suggest that entrepreneurship provides formerly incarcerated individuals an opportunity not only to work but also to overcome income inequality in the paid-employment sector. Formerly incarcerated entrepreneurs earn higher yearly income than formerly incarcerated employees on average, and entrepreneurship helps decrease the income gap between formerly incarcerated and non-formerly incarcerated individuals by \$6,000 annually.

While this new stream of work has highlighted entrepreneurship as a possible career choice for formerly incarcerated individuals, the question of how entrepreneurship affects formerly incarcerated individuals in subsequent career outcomes remains important yet unanswered. Examining the impact of entrepreneurship on subsequent career outcomes for formerly incarcerated individuals will provide a deeper understanding of the overall effects of entrepreneurship as a career choice for the formerly incarcerated. Furthermore, the results and insights we find from the effects of entrepreneurship on formerly incarcerated individuals can be generalized to other groups that face severe labor market discrimination. In particular, formerly incarcerated entrepreneurs are relatable to individuals who become necessity entrepreneurs

because of stigma or negative perception rather than their lack of ability. I believe the results are generalizable not only to those who are discriminated against, such as racial minorities, LGBTQ people, people with disabilities, or women, but also to individuals who are pushed into entrepreneurship by unexpected layoffs, economic downturns, or organizational failures (e.g., Thébaud 2015, Yang and Kacperczyk 2018, Conti, Kacperczyk, and Valentini 2018, Waldinger, Ward, and Aldrich 1985).

Examining the formerly incarcerated population provides empirical benefits, as I can take advantage of the staggered implementation of the “Ban-the-Box” policy, an exogenous state- and county-level policy shock in the United States. The “Ban-the-Box” policy, which has been implemented in 35 states and over 150 counties as of 2019, bars employers from checking criminal backgrounds until later in the hiring process (Avery and Hernandez 2019). The policy aims to mitigate discrimination in the employment process and increase employment opportunities for formerly incarcerated individuals. I use the introduction of this policy to parse out entrepreneurship that is more likely to have been driven by the lack of alternative employment opportunities.

2.4 Data & Methods

2.4.1 Data and Sample

This paper merges data from the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97) with hand-coded data on “Ban-the-Box” policy changes for all states and counties of the United States. The NLSY97 follows the lives of a representative cohort of 8,984 men and women, who were 12 to 18 years old when first surveyed in 1997. These individuals were interviewed annually from 1997 through 2011 and biennially thereafter. The restricted

NLSY97 Geocode data provides identifying information about yearly state- and county-level residence by survey respondent, thus allowing us to utilize county- and state-level policy shocks to address the causal mechanism. As shown by prior research (e.g., Western 2002, Western and Petit 2010), the NLSY data is suitable for studies of labor market outcomes and incarceration because it reports a comprehensive range of variables on entrepreneurship and employment, allowing us to examine entrepreneurial and employment transitions as well as related earnings. Furthermore, the data set provides detailed information on adult incarceration and juvenile detention. My analyses use the NLSY97 from years 1997 to 2015. My final estimation sample is a balanced panel with 170,696 individual-year observations on 8,984 unique individuals.

I merged the NLSY97 data with a hand-coded database on “Ban-the-Box” policy changes for all states and counties of the United States. I generated this data by combining details of “Ban-the-Box” policies from the National Employment Law Project (NELP) (Avery and Hernandez 2018). I supplemented the data from NELP by hand-coding details from legislative bills and executive orders of states and counties on the implementation of the “Ban-the-Box” policy or the Fair Chance Act. I collected data on the effective date of the policy and whether the policy included public, private, and/or contract employers.¹¹ My analyses consider “Ban-the-Box” policies for public employers effective by December 2015, which results in 18 states and 133 counties that implement the “Ban-the-Box” policy.

2.4.2 Measures

Entrepreneurship. I measured entrepreneurship by examining whether a survey respondent reported their job as “self-employed.” The NLSY97 surveys explicitly define self-employment:

¹¹ When information about a policy’s effective date was available, I used that date as the start date of the policy; otherwise I used the date the policy was announced or passed by the legislature. If only the year (month) of implementation was available, I used January 1 of that year (the first of that month) as the start date.

“Self-employed jobs are where you own your own business (for example, a lawn service) or where you do the same type of task for many different people (designing web sites, for instance). In self-employed jobs, you are your own boss.”¹² This definition of self-employment is consistent with those used in surveys such as the Current Population Survey (CPS), the official source of data on employment and unemployment in the United States, as well as previous studies of entrepreneurship (e.g., Light 1972, Portes and Zhou 1996, Yang and Aldrich 2014, Evans and Leighton 1989, Hegde and Tumlinson 2015). In order to exclude short-term self-employment or freelancing, which are unlikely to be actual entrepreneurship, I measure entrepreneurship only as self-employment that lasts more than four weeks. As a result, on average 9.23% of the survey respondents were self-employed each year, and 32.62% had at least once experienced self-employment throughout the survey rounds. The statistics from my sample are comparable with CPS, which reports self-employment rates in the United States were approximately 10% to 11% during this period (Hippel 2010). For robustness, I also measured entrepreneurship as (a) the subset of self-employed individuals who report owning an incorporated business and (b) the subset of self-employed individuals who report having employees. My results are consistent throughout.

Prior Incarceration. Prior incarceration is measured by whether the survey respondent served time in a correctional institution. The NLSY97 documents monthly status, i.e., whether the respondent was incarcerated or not in each month of the year, collected yearly from 1992 to 2015. The prior incarceration variable is 1 if respondents said they were previously incarcerated in any months of year $t-1$ or earlier, and 0 otherwise. This prior incarceration variable provides the key information needed to estimate the effect of incarceration after release. I find that on

¹² NLSY variable codebook on self-employment can be found:
<https://www.nlsinfo.org/sites/nlsinfo.org/files/attachments/17036/NLSY97R17Employment.html>

average 1.59% of the survey respondents were currently incarcerated each year, and 9.34% have been incarcerated at least once during the years 1992 to 2015. This is similar to statistics from other studies and samples, where the percentage of those who have been previously incarcerated range from 7.8% to 9% (Western 2002, Bonczar and Beck 1997). The accuracy of incarceration as measured in the NLSY has been further assessed by Western (2002), who shows comparable incarceration trends between the NLSY survey and aggregate information from the CPS and the Bureau of Justice Statistics' administrative data. Individuals were excluded from analyses in the years when they were incarcerated, since of course they were unable to participate in employment or entrepreneurship. Current incarceration status can also be controlled for by adding a variable measuring whether the respondent was incarcerated in current year t . This approach yields substantively identical results.

Employability. I measured employability by the number of weeks worked in wage-employment in a year, excluding all weeks worked in self-employment. Alternatively, I gauge employability by measuring the number of weeks in unemployment. Earnings from employment are measured as yearly income from employment and logged yearly income for robustness. Earnings from self-employment are separately measured as yearly income from self-employment and logged yearly self-employment income for robustness. The NLSY97 surveys report income after checking the data against the individuals' information gathered from Employer Surveys and Current Population Surveys. It is possible that entrepreneurs' incomes and wealth are higher, not because they are compensated more for their work, but because they work more (Hegde and Tumilson 2018). Therefore, I conduct robustness checks by measuring individual earnings through their logged hourly pay rates and find consistent results. Finally, according to some scholars, entrepreneurs under-report their income by as much as 30% (Sarada 2010). Therefore, I also use

the reported net worth of respondents as a measure of their overall wealth and find consistent results.

Race and Ethnicity. The NLSY97 categorizes race and ethnicity as Black, Hispanic, Asian, White, and mixed race. My sample holds 25.99% Blacks, 21.16% Hispanics, 1.78% Asians, 50.19% Whites, and 0.92% mixed race. I control for each race and ethnicity by adding dummy variables for all race categories except Whites, the omitted category. For most of my analyses, I include individual-level fixed effects that control for race. I also examine subsamples by race, since past scholarship on labor market discrimination and incarceration suggests that the main effects for each race may differ (Western 2002, Pager 2003). Indeed, I observe substantially different likelihoods of incarceration by race: 13.10% of Blacks, 9.2% of Hispanics, 4.38% of Asians, 7.42% of Whites, and 13.25% of mixed race were incarcerated. I control for gender. In my sample, 48.80% are female. Female respondents and male respondents also show different likelihoods of incarceration: 3.7% of the female respondents have been incarcerated, compared to 14.66% of the male respondents.

Individual Educational Attainment and Cognitive Ability. I account for individual-level human capital differences that may affect either the likelihood of being incarcerated or selection into entrepreneurship and employment. Specifically, I include variables on individual educational attainment and cognitive ability. I measured educational attainment by the log years of total education completed. I find similar results when measuring educational attainment as the highest educational degree attained. Cognitive ability of individuals is measured by the percentiles generated from the Armed Services Vocational Aptitude Battery (ASVAB) Test scores. The ASVAB Test, or the composite percentile generated from this test (Armed Forces Qualification Test Score), has been used to measure the cognitive ability of individuals in the setting of both

incarceration and entrepreneurship (Western 2002, Fairlie 2002, Hegde and Tumilson 2018). The ASVAB Test measures the respondent's knowledge and skills in the topical areas of Arithmetic Reasoning, Math Knowledge, Word Knowledge, and Paragraph Comprehension. The NLSY respondents took the ASVAB from the summer of 1997 through the spring of 1998, when they were 12 to 18 years of age. I use the age-adjusted percentiles of the ASVAB Test scores, which were generated using the procedures described in the NLSY97 Codebook Supplement Appendix 10.¹³

Other Control Variables. I also control for lagged yearly individual and family income, since scholars have found wealth to drive decisions to engage in entrepreneurship by providing resources that facilitate both the founding and management of a business (Renzulli, Aldrich, and Moody 2000, Evans and Jovanovic 1989, Evans and Leighton 1989). I measure lagged yearly individual and family income through annual survey questions that address respondents' own and total family income in the previous year. I control for the number of months worked, including both self-employment and employment, in the previous year. I control for the local unemployment rate at the Metropolitan Statistical Area (MSA) level, because the jobless rate of the local area of residence, in addition to incarceration, may affect the respondent's employment and entrepreneurship opportunities. Finally, I include year and county level fixed effects.

Table 1 shows the descriptive statistics of the main variables from year 1997 to 2015. Table 1 Panel A provides the statistics for the full individual-year sample, with 170,696 observations, while Table 1 Panel B provides the statistics for variables that apply to only formerly incarcerated individuals, with 7,369 observations. Table 2 further provides illustrative

¹³ NLSY 97 Codebook Supplement Appendix 10 can be found here: <https://www.nlsinfo.org/content/cohorts/nlsy97/other-documentation/codebook-supplement/appendix-10-cat-asvab-scores>

statistics for one year, 2010. This table shows the individual-level statistics for all individuals, individuals who were never incarcerated, and those who have been formerly incarcerated, sorted by race.

Table 2.1: Summary Statistics for Full Sample (1997-2015)

	Mean	Standard Deviation	Min	Max
<i>Full Sample (Individual-Years, N=170,696)</i>				
Entrepreneurship	0.083	0.275	0	1
Past Incarceration	0.043	0.203	0	1
Ln(Years of Education)	2.457	0.165	2.30	3.04
Ln(Yearly Income)	1.738	1.754	-6.91	5.70
Ln(Family Income)	3.644	1.518	-2.00	6.91
Number of Months Worked	6.496	4.586	0	12
Number of Months in Paid-Employment	5.991	4.663	0	12
Number of Months in Entrepreneurship	0.505	2.122	0	12
Number of Months Unemployed	0.737	2.114	0	12
MSA Unemployment Rate	6.155	2.633	1	27.80

Table 2.2: Comparison of Never Incarcerated versus Formerly Incarcerated for Full Sample and Race Sub-Samples

	Full Sample			Sub-Sample: Black Population			Sub-Sample: White Population		
	All	Never Incarcerated	Formerly Incarcerated	All	Never Incarcerated	Formerly Incarcerated	All	Never Incarcerated	Formerly Incarcerated
Past Incarceration	6.7%			8.8%			5.5%		
Entrepreneurship	11.4%	11.0%	19.1%	10.9%	10.4%	18.8%	12.1%	11.6%	20.5%
Years of Education	12.74	12.85	11.49	12.35	12.47	11.37	13.15	13.25	11.69
ASVAB (AFQT) Test Percentage	55.25	56.23	42.81	42.91	43.51	36.24	64.16	65.02	50.51
Ln (Yearly Income in Dollars)	2.65	2.69	2.13	2.30	2.37	1.57	2.81	2.83	2.48
Ln (Family Income in Dollars)	3.71	3.78	2.83	3.10	3.18	2.19	4.01	4.06	3.23
Yearly Income in Dollars	25,272	26,081	16,669	19,193	20,340	9,810	28,625	29,215	20,771
Family Income in Dollars	90,224	93,466	49,613	60,022	63,229	37,460	106,158	108,921	52,841
Number of Months Worked	7.36	7.55	6.26	6.55	6.93	4.63	7.74	7.83	7.18
Number of Months in Paid-Employment	6.63	6.76	4.74	5.88	6.11	3.47	6.93	7.01	5.42
Number of Months in Entrepreneurship	0.74	0.71	1.05	0.67	0.65	0.86	0.81	0.79	1.18
Number of Months Unemployed	1.02	0.95	2.01	1.70	1.61	2.69	0.70	0.65	1.60
MSA Unemployment Rate	8.63%	8.61%	8.96%	8.63%	8.62%	8.71%	8.33%	8.30%	8.69%
Number of Observations	8,984	8,293	491	2,335	2,077	165	4,665	4,387	215

*Note: Individuals who are not included in the "Never Incarcerated" and "Formerly Incarcerated" groups are individuals who are currently incarcerated. This table provides illustrative statistics for representative year, 2010, the first year where all survey respondents are 25 years or older

2.4.3 Empirical Specification

To study entrepreneurial effects on subsequent labor market outcomes for formerly incarcerated individuals, I conduct a series of OLS regression analyses. First, I estimate the probability that an individual successfully transitions to employment as a function of former incarceration, entrepreneurship, and other control variables such as cognitive ability, education, and prior income through the main model:

$$\begin{aligned} \text{Employability}_{it} &= \alpha + \beta_1 \text{PastIncarceration}_{it} + \beta_2 \text{PastEntrepreneurship}_{it-1} \\ &+ \beta_3 \text{PastIncarceration}_{it} * \text{PastEntrepreneurship}_{it-1} + \beta_4 X_{it} + \epsilon_{it} \end{aligned}$$

where $\text{Employability}_{it}$ represents the number of weeks the survey respondent i was employed at time t , $\text{PastEntrepreneurship}_{it-1}$ represents whether survey respondent i engaged in entrepreneurship at year $t - 1$, $\text{PastIncarceration}_{it}$ measures whether respondent i was formerly incarcerated at time t , X_{it} is a vector of other individual level control variables, and ϵ_{it} is an error term. For this model, incarceration produces a shift in employability by β_1 percentage points, prior entrepreneurial experience produces a shift in employability by β_2 percentage points, and being a formerly incarcerated entrepreneur shifts employability by $\beta_1 + \beta_2 + \beta_3$ percentage points.

Yet, it is difficult to interpret the results from this model as the causal effect of entrepreneurship and incarceration on subsequent labor market outcomes, because of the nonrandom selection of individuals into entrepreneurship and incarceration. Firstly, there may be a selection effect of formerly incarcerated individuals choosing into entrepreneurship. Formerly incarcerated individuals with certain preexisting characteristics such as higher risk preference,

human capital, or social capital may be more likely to choose into entrepreneurship. Thus, the increase of employability for formerly incarcerated individuals with entrepreneurship experience may be a function of such preexisting traits of formerly incarcerated entrepreneurs instead of a “treatment” effect of entrepreneurship itself. Furthermore, there is the selection effect of certain formerly incarcerated entrepreneurs choosing to exit entrepreneurship and reenter employment. Formerly incarcerated entrepreneurs with certain characteristics such as higher human capital or social capital may choose to exit entrepreneurship and seek employment. In this case, the increase of employment for formerly incarcerated entrepreneurs may be a function of the traits of formerly incarcerated entrepreneurs that choose to exit entrepreneurship instead of the “treatment” effect of entrepreneurship.

Furthermore, it is difficult to formally identify explanatory mechanisms through the analysis of incarceration and subsequent employment outcomes. Pager (2003) raises similar limitations of the difficulty of parsing out underlying mechanisms for studies on incarceration and employment. While researchers have offered numerous mechanisms that may explain the observed relationship between incarceration and employment such as the influence on social networks (Hagan 1993), the loss of human capital (Becker 1975), institutional trauma (Parenti 1999), and legal barriers to employment (Dale 1976), it has been difficult to discern which of these causal mechanisms are at work.

While the main objective of this paper is not to parse out the selection and treatment effect of entrepreneurship, but the joint effect of entrepreneurship and incarceration, I address this issue by utilizing several research designs. Firstly, I take advantage of the longitudinal nature of the dataset and conduct fixed effects regression models. I include individual-level fixed effects to absorb time-invariant, observed and unobserved, individual traits such as cognitive ability,

personality, impulsivity, risk preferences, and fixed demographic characteristics such as race and gender (Caspi et al. 1998). By including the individual fixed effects, I am able to observe within individual changes of employment choices, before and after incarceration and entrepreneurship. I also include year fixed effects to capture any time trends and MSA (county) fixed effects to control for differences between regions.

In addition to fixed effects, I utilize a matching method in order to address concerns about non-random selection into incarceration and entrepreneurship. As formerly incarcerated individuals choosing entrepreneurship may be different from the comparison group of formerly incarcerated individuals who choose to remain in employment, my matching method helps to restrict the “control group” to people similar to the “treatment group” (formerly incarcerated entrepreneurs), except that this “control group” has not been “treated” (formerly incarcerated non-entrepreneurs) (Western 2002). I utilize two different matching methods, (1) coarsened exact matching (CEM) and (2) propensity score matching (PSM). The two types of matching are different in methods, but all aim to address the issue of non-comparable treatment and control group. Through CEM and PSM matching, I use an extensive set of variables such as demographics, education, family background, and residence area in order to create an observationally similar comparison group. Both matching methods show that after matching, the treatment group and control group are similar in terms of the extensive set of variables used for matching.

Finally, I exploit a quasi-natural experiment provided by an exogenous policy shock and a triple-difference regression analysis. Specifically, I use the staggered enactment of a policy widely known as “Ban-the-Box”, a county and state-level law barring employers from examining job applicants’ criminal records until later in the hiring process. As of 2019, the “Ban-the-Box”

policy has been staggeredly adopted in 35 states, Washington D.C., and 170 cities and counties in the United States for public employers, spanning 21 years. Among these localities, 13 states, Washington D.C., and 18 cities and counties have extended their “Ban-the-Box” policy to private employers as well. Due to the limited adoption of “Ban-the-Box” policy for private employers before 2015, my analysis in this paper focuses primarily on the effects of implementing at least a public “Ban-the-Box” policy.

I leverage the staggered adoption of “Ban-the-Box” to identify the causal mechanism of incarceration, entrepreneurship, and employment for several reasons. Firstly, the implementation of this policy exogenously increases employment opportunities for formerly incarcerated individuals in impacted localities. This initiative provides formerly incarcerated job applicants a better chance at employment by removing the conviction history question from job applications and allowing employers to judge applicants on their qualifications without the stigma of a record (Craigie 2020, Avery and Hernandez 2018, Shoag and Veuger 2016). Furthermore, research has shown that “Ban-the-Box” policy decreases entrepreneurship engagement of formerly incarcerated individuals through the mitigation of employer discrimination (Hwang and Phillips 2020).

2.5 Descriptive Statistics

Table 3 shows the descriptive statistics at the individual level, showing the number and percentage of individuals who are incarcerated, become entrepreneurs, and subsequently re-enter employment, by race. The statistics show that a large proportion of formerly incarcerated individuals (35.8%) take part in entrepreneurship after release from prison. Yet, the statistics also

show an interesting pattern of around 64.45% of formerly incarcerated entrepreneurs exiting entrepreneurship to return to wage-employment.

Table 4 shows the descriptive statistics of unemployment and yearly income by subgroups based on incarceration and entrepreneurial experience. Table 4 shows support for my hypothesis that entrepreneurship helps formerly incarcerated entrepreneurs in subsequent labor market outcomes. The descriptive statistics for number of weeks unemployed show that having an entrepreneurial experience for individuals without a criminal record decreases employability, while having a criminal record also decreases employability. Yet, for formerly incarcerated individuals who have entrepreneurial experience, the likelihood of employment increases.

Table 5 compares entrepreneurial ventures by prior incarceration. Descriptive statistics show that entrepreneurial ventures by formerly incarcerated individuals are comparable to those by never incarcerated individuals in terms of the percentage of ventures that are incorporated, the percentage of ventures with employees, number of employees, entrepreneurial income, and average longevity of entrepreneurship. Entrepreneurial ventures by formerly incarcerated individuals tend to have fewer employees, lower yearly annual entrepreneurial income, and shorter longevity, compared to ventures by never incarcerated individuals.

Table 2.3: Number of Individuals by Incarceration/Entrepreneurship/Return to Employment Status (1997-2015)

	Full Sample	Sample by Race			
		White	Black	Hispanic	Asian
<i>Incarceration</i>					
No. of Unique Individuals Ever Incarcerated	839	346	306	176	7
No. of Unique Individuals Ever Incarcerated / Total No. of Individuals (%)	9.34%	7.42%	13.10%	9.26%	4.38%
<i>Entrepreneurship</i>					
No. of Unique Individuals Ever in Entrepreneurship	2,931	1617	693	589	41
No. of Unique Individuals Ever in Entrepreneurship / Total No. of Individuals (%)	32.62%	34.66%	29.68%	30.98%	25.62%
<i>Incarceration & Entrepreneurship</i>					
No. of Unique Formerly Incarcerated Individuals in Entrepreneurship	301	133	94	71	2
No. of Unique Formerly Incarcerated Individuals in Entrepreneurship/ No. of Unique Individuals Ever Incarcerated (%)	35.88%	38.44%	30.72%	40.34%	28.57%
<i>Incarceration & Entrepreneurship & Return to Employment</i>					
No. of Unique Formerly Incarcerated Individuals in Entrepreneurship who Return to Employment	194	91	63	38	2
No. of Unique Formerly Incarcerated Individuals in Entrepreneurship who Return to Employment/ No. of Unique Formerly Incarcerated Individuals in Entrepreneurship (%)	64.45%	68.42%	67.02%	53.52%	100.00%
Total No. of Individuals	8,984	4,665	2,335	1,901	160

Table 2.4: Comparison of Unemployment and Yearly Income by Prior Incarceration

	Never Incarcerated		Formerly Incarcerated	
	Prior Entrepreneur	Never Entrepreneur	Prior Entrepreneur	Never Entrepreneur
Number of Weeks Unemployed	3.25	2.78	3.73	5.81
Yearly Income in Dollars	\$25,022	\$15,090	\$19,726	\$13,937

Table 2.5: Comparison of Entrepreneurial Ventures by Prior Incarceration

	Formerly Incarcerated	Never Incarcerated
Incorporated Entrepreneurship (% of Entrepreneurship by Group)	61 (20%)	616 (22%)
Entrepreneurship with Employees (% of Entrepreneurship by Group)	111 (37%)	698 (25%)
Average No. of Employees (For entrepreneurship with employees)	11.9	15.3
Average Yearly Entrepreneurial Income in Dollars (\$)	22,411	22,762
Average Longevity of Entrepreneurial Venture	2.21	2.48

2.6 Results

2.6.1 Main Results

Table 6 shows the main results for the effects of prior entrepreneurship and incarceration on the number of weeks unemployed. Model 1 shows the results for the full sample of individuals. The results show that being an entrepreneur at time t-1 for individuals without a criminal record decreases the number of weeks unemployed in year t by 28 percentage points. Formerly incarcerated individuals are more likely to be unemployed at time t by 44 percentage points. Yet, for formerly incarcerated individuals who engaged in entrepreneurship at time t-1, the number of weeks unemployed in year t decreases by more than 50 percentage points. This

supports our hypothesis that entrepreneurship boosts employability for formerly incarcerated individuals.

Model 2 shows the results for the sample of individuals who are not engaged in entrepreneurship at time t . Thus, this means that the results from Model 2 will exclude individuals who are not unemployed because of their engagement with entrepreneurship. Model 2 shows that prior incarceration consistently increases the likelihood of unemployment. Yet, for this sample, prior entrepreneurship does not have a significant effect on the likelihood of unemployment. Thus, the results from Model 1 and Model 2 suggests that prior entrepreneurship of non-formerly incarcerated individuals decreases the likelihood of unemployment because of the increased likelihood that prior entrepreneurs continue to engage in entrepreneurship. Thus, the decreased unemployment of non-formerly incarcerated prior entrepreneurs is not driven by the boost of employment but their continued engagement in entrepreneurship. However, Model 2 shows that formerly incarcerated individuals with entrepreneurial experience are less likely to be unemployed, compared to formerly incarcerated individuals without entrepreneurial experience. As Model 2 only includes individuals that are not engaged in entrepreneurship, this decrease of unemployment is driven by the increase of employment for formerly incarcerated individuals with entrepreneurial experience.

Table 2.6: Effects of Prior Entrepreneurship & Incarceration on Unemployment

Dependent Variable	Number of Weeks Unemployed in Year	
	Full Sample	Entrepreneurship (t) = 0
Entrepreneurship (t-1)	-0.684*** (0.094)	0.210 (0.176)
Formerly Incarcerated	1.060*** (0.248)	1.203*** (0.196)
Entrepreneurship (t-1)* Formerly Incarcerated	-1.611*** (0.437)	-1.593* (0.673)
Log Yearly Income (t-1)	-0.173*** (0.023)	-0.168*** (0.019)
Log Family Income (t-1)	-0.528*** (0.023)	-0.548*** (0.023)
County level Unemployment Rate	0.173*** (0.015)	0.186*** (0.016)
Individual Fixed Effect	Y	Y
Year Fixed Effect	Y	Y
MSA Fixed Effect	Y	Y
N	158826	145068
adj. R-sq	0.187	0.194

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

To further examine the boundary conditions of the effect of entrepreneurship and incarceration on subsequent employment, Table 7 shows the results for the effects based on the level of entrepreneurial performance. Model 1 shows the results for the full sample of individual-years. The results show consistent results as Model 1 in Table 5 that entrepreneurship decreases the likelihood of unemployment in year t, while prior incarceration increases the likelihood of unemployment. Model 1 further shows that formerly incarcerated entrepreneurs with lower than median entrepreneurial income, thus unsuccessful formerly incarcerated entrepreneurs are less

likely to be unemployed. This shows support for our hypothesis that unsuccessful formerly incarcerated entrepreneurs are not penalized for their entrepreneurial failure.

Table 2.7: Effects of Prior Entrepreneurship, Incarceration, & Entrepreneurial Success on Unemployment

Dependent Variable	Number of Weeks Unemployed in Year			
	Full	E-ship (t) = 0	Black Population	White Population
Entrepreneurship (t-1)	-0.863*** (0.131)	0.270 (0.241)	0.078 (0.612)	0.304 (0.271)
Formerly Incarcerated	1.282*** (0.223)	1.391*** (0.233)	1.986*** (0.490)	1.515*** (0.312)
Higher than <i>Entrepreneurship</i> Median Income (t-1)	-1.332*** (0.066)	-1.392*** (0.069)	-2.274*** (0.175)	-1.112*** (0.080)
Entrepreneurship (t-1)* Formerly Incarcerated	-1.984*** (0.493)	-3.217*** (0.908)	-4.412* (1.930)	-1.653 (1.175)
Entrepreneurship (t-1)* High Income (t-1)	0.354* (0.174)	-0.144 (0.350)	-0.202 (0.971)	0.095 (0.383)
Formerly Incarcerated * High Income (t-1)	-0.491+ (0.276)	-0.401 (0.288)	0.384 (0.701)	-0.174 (0.354)
Entrepreneurship (t-1)* Formerly Incarcerated * High Income (t-1)	0.697 (0.671)	3.572** (1.355)	5.677+ (3.286)	0.254 (1.639)
Log Family Income (t-1)	-0.191*** (0.018)	-0.185*** (0.019)	-0.262*** (0.044)	-0.104*** (0.024)
County level Unemployment Rate	0.167*** (0.015)	0.180*** (0.016)	0.320*** (0.046)	0.132*** (0.019)
Individual Fixed Effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
MSA Fixed Effect	Y	Y	Y	Y
N	158826	145068	37402	75325
adj. R-sq	0.187	0.193	0.197	0.173

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Table 8 shows how entrepreneurship and incarceration affect income from subsequent wage-employment. The results show that prior entrepreneurship has a negative effect on income from subsequent employment by 1,292 dollars for non-formerly incarcerated entrepreneurs

(Table 8 Model 2), suggesting that prior entrepreneurship may pose penalties to future employment in terms of the quality of job. Prior incarceration also has a significant negative effect on income from employment by around 7,700 dollars, supporting past studies that show the income penalties for formerly incarcerated individuals. Yet, the interaction term of prior incarceration and prior entrepreneurship does not have a significant effect on income from subsequent employment. Thus, this suggests that having an entrepreneurial experience does not penalize formerly incarcerated individuals in terms of income. These results are consistent when using logged yearly income in dollars.

Table 2.8: Effects of Prior Entrepreneurship & Incarceration on Yearly Income

Dependent Variable	Yearly Income in Dollars (\$)	
	Full	Entrepreneurship (t) = 0
Entrepreneurship (t-1)	-536.640** (205.156)	-1292.310*** (325.593)
Formerly Incarcerated	-7288.005*** (287.539)	-7702.838*** (283.798)
Entrepreneurship (t-1)* Formerly Incarcerated	2913.746** (938.097)	-29.284 (1224.791)
Number of Months Worked	877.030*** (11.278)	869.479*** (11.639)
County level Unemployment Rate	339.122*** (29.352)	403.058*** (29.846)
Individual Fixed Effect	Y	Y
Year Fixed Effect	Y	Y
MSA Fixed Effect	Y	Y
N	150003	137417
adj. R-sq	0.606	0.617

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Furthermore, Table 9 shows the effect of entrepreneurship and incarceration by the level of entrepreneurial income. The results first show that individuals with prior entrepreneurial experience with lower than median entrepreneurial income have no significant penalty on subsequent employment income. Yet, individuals with prior entrepreneurial experience with higher than median entrepreneurial income have a negative hit on their income, which shows support for prior research that has found that successful entrepreneurs are penalized by employers for being misfits. However, the effects are reversed for formerly incarcerated individuals that engage in entrepreneurship. Formerly incarcerated individuals with unsuccessful (lower than median entrepreneurial income) entrepreneurial experience have a significant negative hit on their income from employment. Yet, formerly incarcerated individuals with successful (higher than median entrepreneurial income) entrepreneurial experience have a significant positive benefit on their income from employment. This supports our hypothesis that entrepreneurial experience may be beneficial to formerly incarcerated individuals, who lack signals on their work ability or quality to employers. In particular, the positive effect is greatest for successful entrepreneurs, suggesting that employers do not interpret success in entrepreneurship as a signal of misfit but rather a signal of higher quality for formerly incarcerated individuals. On the other hand, because the results show that unsuccessful entrepreneurship poses penalties to income for formerly incarcerated entrepreneurs, this suggests that failure in entrepreneurship signals lack of quality to employers.

**Table 2.9: Effects of Prior Entrepreneurship, Incarceration, & Entrepreneurial Success
on Yearly Income by Sub-Samples**

Dependent Variable	Yearly Income in Dollars			
	Full	Non-Entrepreneurs	Black Population	White Population
Entrepreneurship (t-1)	-1527.608*** (222.719)	367.040 (378.983)	376.632 (576.671)	142.776 (579.413)
Formerly Incarcerated	-4621.718*** (322.672)	-4793.407*** (323.319)	-3782.179*** (397.593)	-4252.786*** (649.888)
Higher than Median Income (t-1)	11167.231*** (121.229)	11309.013*** (121.439)	10600.354*** (204.436)	11673.320*** (187.344)
E-ship (t-1)* Formerly Incarcerated	-763.183 (831.018)	-1815.084 (1134.662)	-2124.020+ (1233.952)	-939.433 (2150.811)
E-ship (t-1)* High Income (t-1)	2457.037*** (351.803)	-1865.935** (601.680)	-1118.563 (1156.234)	-2297.081** (841.969)
Formerly Incarcerated * High Income (t-1)	-2501.336*** (430.554)	-2726.474*** (432.640)	-4408.527*** (639.014)	-3529.722*** (757.914)
E-ship (t-1)* Formerly Incarcerated * High Income (t-1)	4799.534** (1496.686)	2650.202 (2190.267)	4570.641+ (2480.005)	-1326.416 (3065.083)
Number of Months Worked	688.784*** (10.883)	682.274*** (11.252)	499.815*** (19.112)	836.708*** (17.552)
County level Unemployment Rate	231.458*** (28.330)	284.628*** (28.802)	56.678 (54.483)	472.135*** (45.304)
Individual Fixed Effect	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
MSA Fixed Effect	Y	Y	Y	Y
N	150003	137417	35411	71376
adj. R-sq	0.632	0.642	0.636	0.653

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

2.6.2 Mechanism Check

In order to test the mechanism as to why entrepreneurial experience boosts subsequent wage-employment outcomes for formerly incarcerated individuals, I conduct several split sample analyses. I argue that main mechanism that drives the positive impact of entrepreneurship on subsequent wage-employment is the positive signal that entrepreneurial offers to potential employers when hiring formerly incarcerated individuals. If this is the main mechanism, we would expect this to be true particularly for those who lack other positive signals to offer or who are the most stigmatized by employers. Thus, I examine how the effect of entrepreneurship on

subsequent wage-employment differs by the level of education achievement and race. Table 10 Panel A shows the split sample analysis of those who are high school dropouts (Model 1) and those who graduated high school (Model 2). The results show that the positive effect of entrepreneurial experience for formerly incarcerated individuals on subsequent employment is only true for high school dropouts. Thus, entrepreneurship seems to be a positive signal, particularly when there is a lack of any signals to infer skills or ability. Table 10 Panel B splits the high school dropout sample from Panel A by race, minority race (Black and Hispanic) and majority race (White). The results show that the positive effect of entrepreneurial experience for formerly incarcerated individuals is only true for minority race, again suggesting that entrepreneurial experience provides a positive signal particularly for the most stigmatized groups.

**Table 2.10: Effects of Prior Entrepreneurship & Incarceration on Unemployment
by Sub-Samples**

DV: Number of Months Unemployed in Year	Sub-Sample: All Highschool Dropouts	Sub-Sample: All Highschool Grad	Sub-Sample: Black & Hispanic Highschool Dropouts	Sub-Sample: White Highschool Dropouts
	(1)	(2)		
Prior Incarceration	1.835*** (0.384)	1.138*** (0.373)	2.716*** (0.737)	0.416** (0.130)
Entrepreneurship (t-1)	0.827 (0.519)	0.150** (0.046)	0.781** (0.271)	0.098 (0.179)
Prior Incarceration	-3.68*	0.119	-5.666**	0.054
*Entrepreneurship (t-1)	(1.365)	(0.260)	(2.415)	(0.445)
Log Yearly Income (t-1)	-0.014 (0.010)	-0.100*** (0.008)	-0.010 (0.017)	-0.016 (0.011)
Log Family Income (t-1)	-0.096*** (0.009)	-0.079*** (0.007)	-0.096*** (0.013)	-0.088*** (0.012)
Residence Unemployment Rate	0.085*** (0.009)	0.062*** (0.004)	0.073*** (0.014)	0.085*** (0.012)
Race Dummies	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Regional Fixed Effects	Y	Y	Y	Y
N	21119	103626	11580	9400
adj. R-sq	0.088	0.081	0.084	0.076

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

One of the main mechanisms as to why entrepreneurial experience helps formerly incarcerated individuals in securing subsequent employment is that employers consider entrepreneurship by formerly incarcerated individuals to signal different aspects from entrepreneurship by non-formerly incarcerated individuals. In order to check this mechanism, I take advantage of the Ban-the-Box policy shock that bans employers from examining criminal background checks in the hiring process. Thus, as the implementation of the Ban-the-Box policy prohibits employers from looking at criminal records, once the policy is implemented, employers are unable to know whether a potential candidate is formerly or non-formerly incarcerated. If

formerly incarcerated entrepreneurs reap benefits from their entrepreneurial experience because it sends a different signal to employers, we would expect that once Ban-the-Box policy is implemented such benefits should diminish. In other words, the benefits from prior entrepreneurial experience for formerly incarcerated individuals should hold only when Ban-the-Box policy is yet to be implemented.

Table 11 supports this, as the results show that for the sample of formerly incarcerated population, prior entrepreneurship decreases subsequent unemployment when Ban-the-Box policy is not implemented in the county or state. The negative coefficient for Ban-the-Box policy shows that the implementation of this policy helps decrease subsequent unemployment because employers are now less likely to discriminate formerly incarcerated individuals based on their incarceration record. However, most importantly, the interaction effect of entrepreneurship and Ban-the-Box shows that when the benefits from prior entrepreneurial experience disappears when Ban-the-Box policy is implemented.

**Table 2.11: Effects of Prior Entrepreneurship & Ban-the-Box Policy on Unemployment
for the Formerly Incarcerated Population**

DV: Number of Weeks Unemployed	
	(1)
Entrepreneurship (t-1)	-3.005* (1.322)
Ban-the-Box	-1.997* (0.787)
Entrepreneurship (t-1)*Ban-the-Box	5.362* (2.589)
Individual Controls	Y
Time-varying Regional Controls	Y
Year Fixed Effects	Y
Regional Fixed Effects	Y
N	4810
adj. R-sq	0.459

*Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

2.7 Qualitative Interviews

To supplement the findings and results from the quantitative analyses, I conducted 67 qualitative interviews with formerly incarcerated entrepreneurs, formerly incarcerated employees, and employers that hire formerly incarcerated people. These interviews were conducted in order to gain insight into the decisions made by both the formerly incarcerated individuals and employers, in terms of navigating the labor market and the hiring process. The interviews were conducted both in-person or by video phone calls between September 2018 to September 2020. The sample includes 52 formerly incarcerated people, both with and without entrepreneurial experience, and 15 employers that hire formerly incarcerated individuals (ranging from C-level executives to human resource managers). The sample of formerly

incarcerated interviewees are relatively balanced in terms of race, gender, region, education level, crime type, and time since release from prison, though the sample remains over-represented by Black and Hispanic men. The sample of employers are balanced in terms of race, gender, region, industry, and openness to hiring formerly incarcerated people. Interviews lasted between 30 minutes to over 90 minutes, with the majority lasting approximately 45 minutes. The sample of interviewees was built by introductions from personal contacts and by cold calls to randomly selected formerly incarcerated entrepreneurs and employers that hire formerly incarcerated people. The response rate was around 97% for formerly incarcerated people and 80% for employers. Findings did not differ by either sampling strategy (introduction or cold call) or data collection method (in-person or video phone calls).

In my interviews with formerly incarcerated people, I asked open-ended questions on their experiences inside prison and after release from prison, their thought-processes behind the decisions they made in the labor market (for example, why they became entrepreneurs or why they exited out of entrepreneurship), and how their choices have impacted them. In interviews employers, I asked open-ended questions on what kind of potential employee they are looking for, why they hire formerly incarcerated individuals, their thought process when hiring formerly incarcerated people, and what helps or hurts formerly incarcerated people in the hiring process.

The interviews corroborated many of the findings and mechanisms from the quantitative findings. First, the interviews with formerly incarcerated people, both with and without entrepreneurship experience provided details on why formerly incarcerated people became entrepreneurs, corroborating that formerly incarcerated people are essentially pushed into entrepreneurship because of the lack of labor market opportunities in employment. A formerly incarcerated entrepreneur, who founded a tailor shop, reasoned that:

“I was trying to find different employments. But coming back home (from prison), it was very difficult to get employment even though I was very qualified. I needed to find a way that I can still make income in something that I love doing.”

Another formerly incarcerated entrepreneur, who founded a cupcake bakery shop, responded similarly:

“None of the employers would want to hire me. I don't know if it was the stigma of you having a formerly incarcerated person working for you that made them hesitant. So when I saw a lot of doors were closing on me, I said to myself, 'Well, I'm going to have to do it on my own.’”

These responses support that one of the main drivers of entrepreneurship for formerly incarcerated individuals is the lack of employment opportunities for them after release from prison due to the stigma of incarceration, regardless of skill-level or education-level of formerly incarcerated people. While the interviews and the data analyses both show that formerly incarcerated individuals with higher skills or education do have slight advantages in employment, compared to formerly incarcerated individuals without skills-training or education, an incarceration record still severely hurts their likelihood of finding employment. For example, one formerly incarcerated individual who was recently released from prison said:

“I think my (incarceration) record is probably some of the reasons why I didn't get so many callbacks. The employers see that regardless of your skill level. I was trying to use my associate's degree in writing to get a job. But I've received 14 job denials in total.”

Another formerly incarcerated entrepreneur responded that:

"Yeah, I have three armed robberies on my record for life, and so that makes it very difficult to get the types of position that my skill set and my education and experience qualifies me for. Mainly, the only type of positions that I can really get is just general labor positions, where I was delivering pizza, I was delivering medical specimens. These types of jobs, but nothing where you could actually sustain yourself off of it, to have sustainable income, create a real future."

Interestingly, some of the possible alternative mechanisms were also mentioned during some of the interviews, though with less frequency. This leads to the fact that while the main mechanism I argue is supported by my interviews, it may not be possible to completely rule out other mechanisms. For example, some of the formerly incarcerated entrepreneurs discussed other reasons as to why they became entrepreneurs, in addition to labor market discrimination, such as their risk-loving behavior or entrepreneurial mindset. One formerly incarcerated entrepreneur who founded a fitness center said:

"I was a drug dealer in the past. If we take aside the illegality of it, but just the sense of, it's still a business. You still have to deal with supply and demand. You have to deal with having a marketable product, having a good product. Even as a child, I always had some sort of business going, whether it was washing cars, whether it was mowing lawns, whether it was shoveling snow in the winter. It was always some type of hustle I had going on, so it made it a natural for me. Everything was about the hustle, and I guess that makes me a risk-taker as well. That's part of having your own business, you have to be a

risk-taker. I think it was always the love of the risk, and that doesn't necessarily mean illegal, but it's still just a risk in itself."

Interviews with formerly incarcerated individuals also provided insights into why they exit out of entrepreneurship to re-enter employment. While the interviews mostly showed that the most successful formerly incarcerated entrepreneurs continued on in their entrepreneurial venture, some of the successful entrepreneurs also chose to exit entrepreneurship to reenter employment. The main reason for this is that because formerly incarcerated entrepreneurs were pushed into entrepreneurship, their preferred labor market choice always remained employment. Therefore, when given the opportunity, they preferred to leave entrepreneurship to return back to employment. For example, one formerly incarcerated entrepreneur, who founded a relatively successful paralegal business, decided to exit out of entrepreneurship because:

"I came to a point where I wanted to have that security of knowing every Friday, there's pay waiting for you, regardless of how the week went. It (Entrepreneurship) was decent income, but the inconsistency was just too big."

When formerly incarcerated entrepreneurs who chose to exit out of entrepreneurship to reenter employment were asked how they think entrepreneurship impacted (both positively and negatively) their employment outcomes, the most dominant response was how the employers saw value in their entrepreneurial experience. Most responded that employers positively interpreted their entrepreneurial venture as being highly motivated to work. For example, the same formerly incarcerated entrepreneur who founded a paralegal business explained that:

“My entrepreneurial experience was part of the reason why my employer hired me. She had a lot of work, and she knew I was a self-starter. She recognized the value in that.”

Interviews with employers also corroborated that employers see value when formerly incarcerated individuals have had entrepreneurial experience. Many employers emphasized the difficulties when hiring formerly incarcerated people, particularly because of the lack of positive credentials or informative employment records. For example, a human resource manager at a logistics firm responded that:

“You (employer or hiring manager) can normally see responsibility on a resume. You can see commitment and quality if someone stayed at a job long enough, but many of the formerly incarcerated are not coming in with long job histories. So you're not going to be able to get much information from there (their resume).”

Given such lack of information that is provided from formerly incarcerated individuals about their latent quality as potential employees, the concerns that employers have about their skills, commitment, and motivation remain. Employers mentioned that, because of such lack of credentials or signals from formerly incarcerated individuals, having had entrepreneurial experience provides helpful information. For example, the same employer went on to say that:

“Employers are looking for somebody that's motivated and a go-getter. You (potential employee) would want to say something about your entrepreneurial experience during the interview or on your resume to show that.”

In the meantime, some formerly incarcerated entrepreneurs did mention other positive impacts of entrepreneurship, such as an increased sense of gratification or motivation in life. For

example, a formerly incarcerated entrepreneur who founded an optics company talked about such positive impacts as well as the downsides of entrepreneurship, by saying:

"I believe that there's some type of self-gratification in having your own business knowing that you set out to do something and you got it accomplished and now to see that it's up and running. Then also there's a downside it could be more stressful financially having to deal with the ins-and-outs of running inside the business compared to just being an employee where I just go in, do my job, and go back home and I don't have to worry about the bottom line."

Overall, the qualitative interviews with formerly incarcerated individuals and employers seem to support the mechanism that formerly incarcerated individuals engage in entrepreneurship because of the lack of labor market opportunities, despite many of them having preferences for employment. This leads formerly incarcerated entrepreneurs to eventually exit entrepreneurship and return to employment. Furthermore, having entrepreneurial experience seems to help formerly incarcerated individuals in terms of returning to employment, as entrepreneurial experience seems to be a positive signal of commitment and motivation to employers.

2.8 Discussion

This paper examines the question of whether entrepreneurship benefits or hurts subsequent career outcomes, by examining the career trajectories of formerly incarcerated individuals. I find that entrepreneurship helps formerly incarcerated individuals secure subsequent employment compared to formerly incarcerated individuals without entrepreneurial

experience. While entrepreneurship does not increase the likelihood of securing better jobs with higher income for formerly incarcerated individuals, entrepreneurship offers a bridge for formerly incarcerated individuals to secure employment that would otherwise have been impossible without an entrepreneurial experience.

Through these findings, this paper addresses and helps find a boundary condition of the effects of entrepreneurship on post-entrepreneurship career outcomes. While prior studies have been in a conflicting tension of whether entrepreneurship helps or hinders future career outcomes in paid employment, this study offers the labor market process through which individuals choose entrepreneurship as a boundary condition to resolve this tension. This paper highlights that entrepreneurship provides more advantages than disadvantages in subsequent labor market outcomes for individuals who are pushed into entrepreneurship by labor market discrimination.

This study also provides contribution to work on incarceration as one of the first papers to address entrepreneurship of formerly incarcerated people. While recent studies have started to examine entrepreneurship for formerly incarcerated individuals through qualitative analyses of entrepreneurial training programs in prisons (e.g., Cooney 2012), this study is the first to offer quantitative analyses on entrepreneurial transitions and subsequent labor market outcomes for formerly incarcerated individuals. We believe our research opens future research possibilities on formerly incarcerated entrepreneurs. For example, scholars should examine the entrepreneurial process of formerly incarcerated individuals.

While the formerly incarcerated population is a unique group that has not been highlighted in entrepreneurship research, the findings from formerly incarcerated entrepreneurs is generalizable to a broader population of those whom discrimination pushes into entrepreneurship. In particular, formerly incarcerated entrepreneurs are relatable to necessity

entrepreneurs who are discriminated against because of negative perception rather than actual negative ability. I believe the results are generalizable not only to other populations who are discriminated against, such as racial minorities, LGBTQ people, people with disabilities, or women, but also to individuals who are pushed into entrepreneurship by unexpected layoffs, economic downturns, or organizational failures. The results of this paper suggest that while minimizing discrimination in the labor market is the ultimate solution, entrepreneurship can be a valid way for individuals facing discrimination to find work, income, and ultimately a way back into employment.

This study opens new research opportunities, on both entrepreneurship and incarceration. While this study mainly uses survey data to examine the effects of entrepreneurship on subsequent labor market outcomes, there remains the issue of selection and a need for mechanism checks. Therefore, further research examining the mechanism through which entrepreneurship effects formerly incarcerated individuals or individuals who face discrimination will be helpful to more carefully understand the issue. For example, a résumé audit study that randomizes incarceration records and entrepreneurial experience may help tackle the selection issue, and a survey of employers may help address the mechanism by which they prefer incarcerated individuals with entrepreneurial experience.

Finally, an increasing number of individuals are returning to society from prisons and jails as a consequence of mass incarceration. Thus, it becomes more and more important to consider the impact of incarceration on reentry and how formerly incarcerated individuals can overcome the common pathway to unemployment and recidivism. Our paper is an attempt to introduce and understand entrepreneurship as an alternative response to the poor employment outcomes and labor market discrimination that await formerly incarcerated individuals. Future

research is needed to expand this emphasis on entrepreneurship by exploring the antecedents, process, mechanisms, and diverse outcomes of entrepreneurship for formerly incarcerated individuals. In this way, we can move toward a more complete understanding of the labor market choices that formerly incarcerated individuals can make in order to successfully reenter and remain in the society.

Entrepreneurship in this paper is defined as self-employment. This definition is similar to that used in previous studies of entrepreneurship in the fields of management, economics, and sociology (e.g., Lippman, Davis, and Aldrich 2005, Hegde and Tumilson 2018). Yet I acknowledge that entrepreneurship defined as self-employment has different aspects compared to narrowly defined, growth-oriented entrepreneurship. For example, the definition of self-employment may include small shopkeepers and restaurant owners as well as innovative start-ups, and thus people who have less of a desire to innovate and grow big. While this paper addresses the issue by also measuring entrepreneurship as incorporated self-employment, our results including non-incorporated self-employment have meaningful implications. Arguably, finding positive effects from low-growth self-employment makes the results of this paper stronger. If low-growth self-employment has long-standing positive effects on subsequent labor market outcomes for formerly incarcerated individuals, this would make it likely that these effects are even stronger for high-growth entrepreneurship. A study that looks at data restricted to these more innovative start-ups by individuals facing discrimination in the labor market would be an interesting avenue for future research.

Essay 3: Barriers to Entrepreneurship for Formerly Incarcerated Individuals

3.1 Introduction

Formerly incarcerated individuals in the United States continue to face pervasive labor market discrimination (Petit and Western 2004, Pager 2003). In response, recent work has introduced entrepreneurship as an alternative pathway for formerly incarcerated individuals to find work and greater income (First essay of dissertation), and to achieve long-term success in their career trajectories (Second essay of dissertation). While such research highlights entrepreneurship as a viable labor market choice for formerly incarcerated people, we know little of whether formerly incarcerated people face barriers when starting their own businesses and the consequences of such barriers. This paper takes an early step to examine entrepreneurial barriers for the formerly incarcerated population and will particularly focus on one of the most essential barriers to starting a new business: barriers to financial capital.

Research has provided evidence that prospective entrepreneurs face considerable barriers and challenges during entrepreneurship, both in the process of founding one's own business and sustaining the venture (Cooper et al. 1994). For example, studies have found abundant evidence on the importance of financial resources in starting and sustaining a business and the challenges that lack of financial capital give to entrepreneurs (e.g., Fairlie and Robb 2008, Fay and Williams 1993). Other research has found that access and links to powerful social capital are essential for successful entrepreneurship, highlighting the obstacles that those without necessary social capital face when starting a venture (e.g., Kim and Aldrich 2005, Renzulli, Aldrich, and Moody 2000). In addition to financial and social barriers to entrepreneurship, scholars have found how the lack

of human capital or entrepreneurial training cast hindrances to entrepreneurship (e.g., Astebro and Bernhardt 2005, Bates 2007).

As such, entrepreneurship typically entails challenges and barriers in the process. For entrepreneurs coming from disadvantaged populations, such barriers are more pronounced. Research focusing on disadvantaged populations, such as racial minorities, women, immigrants, and individuals with disabilities have found how the challenges of starting and sustaining an entrepreneurial venture is amplified (e.g., Blanchflower, Levine, and Zimmerman, 2003, Thébaud 2015). For example, recent research provides evidence of discrimination-based barriers to entrepreneurial entry for Black individuals (Blanchflower et al. 2003, Fairlie and Robb, 2008, Chatterji and Seamans 2012). Fairlie and Robb (2008) show the how Black-owned businesses are less likely to be successful in terms of longevity and size because of barriers in startup capital, inheritance of business-ownership experience from family members, and opportunities to acquire business human capital and prior work experience. Studies have also found similar discrimination-based barriers to entrepreneurship for women, showing that women-lead start-ups are disadvantaged by potential investors and lenders despite the lack of any underlying differences in the qualifications of the entrepreneur or the quality of the start-up (Bigelow et al. 2014, Brooks et al. 2014, Shane et al. 2012, Thébaud 2015).

This paper takes an early step to explore the entrepreneurial barriers for the formerly incarcerated population, particularly barriers to financial capital. I specifically investigate whether formerly incarcerated individuals, compared to similar non-formerly incarcerated individuals, face greater barriers in gaining access to financial capital to enter entrepreneurship. Furthermore, this paper looks into the consequences of these barriers on the characteristics of the

venture such as the legal form and industry, and more long-term entrepreneurial outcomes such as success, longevity, and growth.

Using data from the National Longitudinal Survey of Youth 1979 (NLSY79) and National Longitudinal Survey of Youth 1997 (NLSY97), I find that formerly incarcerated individuals face barriers to gaining financial capital necessary for entrepreneurial entry. Results show that formerly incarcerated individuals, compared to similar non-formerly incarcerated individuals, are 55% less likely to obtain financial capital from financial institutions such as bank loans or credit cards, or the government. This leads formerly incarcerated individuals to rely on personal savings or family and friends for their financial resources to start their own businesses. Formerly incarcerated individuals are also 70% more likely to start businesses where no financial capital is needed. While such barriers to gaining access to capital from financial institutions or the government exists regardless of race, the barriers are particularly pronounced for Black and Hispanic formerly incarcerated individuals, suggesting discrimination-based differences in terms of gaining access to capital.

Importantly, I provide evidence of the consequences of the financial barriers that formerly incarcerated individuals face. First, I find that formerly incarcerated entrepreneurs are less likely to go into high capital intensive industries. Formerly incarcerated individuals are least likely to start businesses in industries that are capital intensive such as Mining, Manufacturing, or Finance, Insurance, and Real Estate. Instead, formerly incarcerated individuals tend to start businesses in industries such as Construction or Services that require little start-up capital and no physical locations. Second, the legal form of the businesses started by formerly incarcerated individuals are more likely to be sole proprietorships or partnerships (89%) than corporations (17%), compared to non-formerly incarcerated individuals. This is particularly more pronounced

by race, where I find that formerly incarcerated racial minorities (Black and Hispanic formerly incarcerated individuals) are more likely to found sole proprietorships or partnerships than corporations, compared to White formerly incarcerated individuals.

I also find that the financial barriers that formerly incarcerated individuals face negatively impacts entrepreneurial outcomes such as longevity and size. My results show that ventures started by formerly incarcerated individuals are more likely to fail within a year of founding, and this is particularly true for ventures that are not backed by financial institutions or the government. Businesses started by formerly incarcerated individuals, on average, have more than 10% shorter longevity and again this is more pronounced for businesses that are not funded by financial institutions or the government. Lastly, I find evidence that formerly incarcerated individuals are smaller in size in terms of number of employees. Businesses founded by non-formerly incarcerated individuals are 30% more likely to have more than 10 employees, and 55% more likely to have more than 50 employees.

As one of the first papers to examine the barriers that formerly incarcerated individuals face in entrepreneurship, this study contributes to extending our understanding of the diverse barriers and challenges that formerly incarcerated people face in the labor market. Most studies on incarceration and discrimination have been focused on employment barriers, and our knowledge on the potential barriers and challenges to entrepreneurship have been sparse. Yet, understanding the barriers to entrepreneurship for formerly incarcerated individuals is important as entrepreneurship is increasingly being acknowledged as an alternative labor market choice for formerly incarcerated individuals.

By examining the potential ramifications of entrepreneurial barriers for formerly incarcerated individuals, this paper provides implications to policymakers and practitioners. The

results that financial barriers to entrepreneurship for formerly incarcerated individuals impact the type and industry of entrepreneurship they pursue, and in the long-term the longevity and size of the venture, illuminates the broader negative repercussions of entrepreneurial barriers. Initial barriers to financial resources for formerly incarcerated individuals amount to stunting the likelihood of formerly incarcerated individuals to pursue growth-oriented startups, that are more clearly linked to upward social and economic mobility. This suggests that while entrepreneurship is gaining attention as a way to overcome discrimination for formerly incarcerated individuals, with the ongoing financial barriers to entrepreneurship, this approach to overcoming discrimination may still be a difficult task for formerly incarcerated people. In particular, with the increased dependence of formerly incarcerated individuals on family and friends to start businesses, entrepreneurship may become an exclusive way to overcome discrimination for the narrow pool of more privileged or well-connected formerly incarcerated individuals.

There remain limitations to this study that provide implications for future research. While this study illuminates the potential barriers formerly incarcerated individuals face in gaining financial capital, the underlying mechanism as to why formerly incarcerated individuals are disadvantaged in gaining financial resources, particularly from financial institutions, remains unclear. While racial differences in access to financial capital suggests discriminated-based barriers as one of the mechanisms, this study is unable to parse out other potential mechanisms. For example, formerly incarcerated individuals may have little access to financial capital because they are less likely to pursue and seek ventures that require financial capital in the first place. Therefore, future research should examine the underlying mechanisms for the barriers to entrepreneurship for formerly incarcerated individuals, gaging how much of the barriers are directly accountable to discrimination. Moreover, while this study focuses on financial barriers,

research on other barriers to entrepreneurship such as human capital and social capital will help us fully understand the challenges that formerly incarcerated individuals face when pursuing entrepreneurship as a career.

3.2 Theory & Hypotheses

3.2.1 Entrepreneurial Barriers for Discriminated Populations

The pursuit of entrepreneurship or business ownership fits into the American ideal of grasping opportunities for upward mobility and advancement without regard to one's current status (Chinoy, 1955, Kim, Aldrich, and Keister 2006). Therefore, while entrepreneurship entails numerous risks, this belief that entrepreneurship will provide equal access to new opportunities and mobility lures many in the United States into attempts at starting their own businesses (Kim, Aldrich, and Keister 2006, Steinmetz and Wright 1989, Lipset and Bendix 1959). Particularly, individuals who face blocked opportunities in employment seek entrepreneurship as a source of upward social and economic mobility (Glazer and Moynihan 1970, Light 1972, 1979). For example, scholars have found that discriminated population groups such as formerly incarcerated individuals (Hwang and Phillips 2020, Hwang 2021), women (Thébaud 2015, Yang and Kacperczyk 2018, Rosti and Chelli 2005), LGBTQ (Conti, Kacperczyk, and Valentini 2018), immigrants (Waldinger, Ward, and Aldrich 1985, Min 1993, Light 1972), and racial minorities (Walstad and Kourilsky 1998, Fairlie 2001) engage in entrepreneurship in order to find opportunities due to the lack of such in employment.

However, despite theory and empirical evidence that entrepreneurship provides routes and opportunities to those who are discriminated in the labor market, some scholars have asked whether opportunities to become an entrepreneur are distributed evenly across population groups

(e.g., Kim et al. 2006). Research has mostly found evidence that opportunities to entrepreneurship are disproportionately favorable to those who are already advantaged or privileged in the society (Keister and Moller 2000). For example, research has found that individuals who have rich social capital and networks (Renzulli, Aldrich, and Moody 2000), have greater financial resources and wealth ((Evans and Jovanovic 1989), or have greater entrepreneurial knowledge and know-how from family members who were also entrepreneurs (Aldrich and Cliff 2003), are more likely to become and succeed as entrepreneurs.

At the same time, research has found that groups that are typically discriminated in the labor market face substantial barriers and stigma at the stage of entrepreneurial entry as well, due in part to cultural factors and negative stereotypes (Budig 2002, Keister 2000, Thébaud 2015, Thébaud and Sharkey 2016, Waldinger et al. 1990, Thebaud, 2010, Blanchflower, Levine, and Zimmerman, 2003, Fairlie and Robb, 2007, Younkin and Kuppuswamy, 2017). For example, recent research provides evidence of discrimination-based barriers to entrepreneurial entry for Black individuals (Blanchflower et al. 2003, Fairlie and Robb, 2008, Chatterji and Seamans 2012). Fairlie and Robb (2008) show the how Black-owned businesses are less likely to be successful in terms of longevity and size because of barriers in startup capital, inheritance of business-ownership experience from family members, and opportunities to acquire business human capital and prior work experience. Studies have also found similar discrimination-based barriers to entrepreneurship for women, showing that women-lead start-ups are disadvantaged by potential investors and lenders despite the lack of any underlying differences in the qualifications of the entrepreneur or the quality of the start-up (Bigelow et al. 2014, Brooks et al. 2014, Shane et al. 2012, Thébaud 2015).

3.2.2 Entrepreneurial Barriers for Formerly Incarcerated Individuals

Research has found evidence for the barriers that formerly incarcerated individuals face when entering employment (Pager 2003). Similarly, studies suggest similar barriers in mortgage and renting markets for the formerly incarcerated population (White et al. 2019). There have been numerous scholars examining the reasons for such barriers into employment and rent, and the downstream repercussions of such barriers (e.g., Holzer et al. 2006). However, to date, there are no studies assessing the barriers to entrepreneurship that formerly incarcerated individuals face in the process of founding and sustaining a business. Therefore, this study seeks to illuminate the barriers to entrepreneurship for formerly incarcerated individuals and the ramifications of such barriers, by focusing on the financial barriers to entrepreneurship.

I hypothesize that formerly incarcerated individuals will face greater financial barriers when starting a new business. Specifically, formerly incarcerated individuals will be less likely to access financial capital through formal channels such as financial institutions or the government. Research on entrepreneurial barriers for women show that commercial banks are risk-averse lending institutions, and will be less likely to fund women who are more likely to have limited education and work experience in the area they wish to operate (Hisrich and Brush 1983, 1986, Humphries and McClung 1981; Bowen and Hisrich 1986). Similarly, formerly incarcerated individuals are more likely to have limited human capital in terms of education, work experience, and entrepreneurial knowledge, that may lead to increased challenges in gaining financial resources from financial institutions.

However, I further hypothesize that beyond concerns of differences in human capital, formerly incarcerated individuals will also face discrimination-based barriers in gaining resources from financial capital. Specifically, I hypothesize that even given similar

qualifications, formerly incarcerated individuals will have greater difficulty in securing financial capital from formal routes. As the negative stigma and prejudice against formerly incarcerated individuals as less competent and untrustworthy put employers against potential employees (Holzer et al. 2006), I argue that the financial institutions may also fall prey to similar stigmatization against formerly incarcerated individuals pursuing entrepreneurial loans. Therefore, I expect formerly incarcerated individuals to face barriers to gaining financial capital, regardless of human capital, and I hypothesize that such barriers will be more pronounced for racial minorities who face greater stigma in the society.

This paper further examines the ramifications of such entrepreneurial barriers for formerly incarcerated individuals. Lack of access to capital from financial institutions may be the biggest obstacle for formerly incarcerated entrepreneurs, limiting opportunities for business start-up and subsequent success. In the absence of supportive policies and programs, with such high barriers to gaining financial resources from financial institutions, starting a business may be made challenging for formerly incarcerated individuals. I hypothesize that this such barriers to financial capital will, first, limit the type or industry of business that can be created by formerly incarcerated individuals. Low-income entrepreneurs are often forced to establish labor-intensive businesses in the service sector rather than capital-intensive ventures such as wholesaling and manufacturing (Raheim 1997). Therefore, similarly, I expect formerly incarcerated entrepreneurs to enter into low capital-intensive industries.

Furthermore, I hypothesize that such financial barriers to entrepreneurship will have negative impacts on the long-term entrepreneurial outcomes for formerly incarcerated individuals. Financial stability and resources have been found to be one of the main drivers of entrepreneurial success (Kim, Aldrich, Keister 2006). Therefore, I expect that the lack of such

financial stability will stunt entrepreneurial outcomes for formerly incarcerated individuals, in terms of longevity, growth, and size.

3.3 Data & Measures

3.3.1 Data

This paper utilizes data from the 1979 and 1997 cohort of the National Longitudinal Survey of Youth (NLSY97). The NLSY79 Cohort is a longitudinal data that follows the lives of a sample of youth in the United States born between 1957-64. The cohort includes 12,686 respondents ages 14-22 when first interviewed in 1979, and were interviewed from 1979 (Round 1) to 2018 (Round 28). NLSY97 follows the lives of a representative cohort of 8,984 men and women, who were 12 to 18 years old when first surveyed in 1997. These individuals were interviewed annually from 1997 (Round 1) through 2011 and biennially thereafter. As shown by prior research (e.g., Western 2002, Western and Petit 2010), the NLSY data is suitable for studies of labor market outcomes and incarceration because it reports a comprehensive range of variables on entrepreneurship and employment, allowing us to examine entrepreneurial and employment transitions as well as related earnings. Furthermore, the data set provides detailed information on adult incarceration and juvenile detention. I use the NLSY79 data from years 1979 to 2018 and NLSY97 from years 1997 to 2015.

To supplement the findings and results from the quantitative analyses, I conducted 67 qualitative interviews with formerly incarcerated entrepreneurs, formerly incarcerated employees, and employers that hire formerly incarcerated people. These interviews were conducted in order to gain insight into the decisions made by both the formerly incarcerated individuals and employers, in terms of navigating the labor market and the hiring process. The

interviews were conducted both in-person or by video phone calls between September 2018 to September 2020. The sample includes 52 formerly incarcerated people, both with and without entrepreneurial experience, and 15 employers that hire formerly incarcerated individuals (ranging from C-level executives to human resource managers). The sample of formerly incarcerated interviewees are relatively balanced in terms of race, gender, region, education level, crime type, and time since release from prison, though the sample remains over-represented by Black and Hispanic men. The sample of employers are balanced in terms of race, gender, region, industry, and openness to hiring formerly incarcerated people. Interviews lasted between 30 minutes to over 90 minutes, with the majority lasting approximately 45 minutes. The sample of interviewees was built by introductions from personal contacts and by cold calls to randomly selected formerly incarcerated entrepreneurs and employers that hire formerly incarcerated people. The response rate was around 97% for formerly incarcerated people and 80% for employers. Findings did not differ by either sampling strategy (introduction or cold call) or data collection method (in-person or video phone calls). In my interviews with formerly incarcerated people, I asked open-ended questions on their experiences inside prison and after release from prison, their thought-processes behind the decisions they made in the labor market (for example, why they became entrepreneurs or why they exited out of entrepreneurship), and how their choices have impacted them.

3.3.2 Measures

Entrepreneurship. I measured entrepreneurship in NLSY79 through the business ownership data collected in 2010 (round 24) and onwards. NLSY79 respondents who were current or former business owners were asked a lengthy series of questions about each business owned since age 18. The business ownership questions were also asked in subsequent survey years for those not

interviewed in 2010. “Business Ownership” in the NLSY79 survey was defined as: “By business, we mean any activity operated with regularity for the purpose of generating income or profit. We are interested in all incorporated companies and partnerships in which you had any ownership share, as well as unincorporated businesses that you may have operated as a sole proprietor, independent contractor, consultant, or free-lancer. This even includes informal businesses such as cleaning services, gardening services, and the selling of goods out of your home, as long as they generated income and were operated on a regular basis. The only businesses we are not interested in are those operated on a highly sporadic basis, those carried out purely as a hobby, and those in which you were merely a shareholder or investor with no role in the operation of the company” (NLSY 79 Codebook, 2010). In NLSY97, I measure entrepreneurship by examining whether a survey respondent reported their job as “self-employed.” The NLSY97 surveys explicitly define self-employment: “Self-employed jobs are where you own your own business (for example, a lawn service) or where you do the same type of task for many different people (designing web sites, for instance). In self-employed jobs, you are your own boss.”

These definitions of self-employment in NLSY79 and NLSY97 are consistent with those used in surveys such as the Current Population Survey (CPS), the official source of data on employment and unemployment in the United States, as well as previous studies of entrepreneurship (e.g., Light 1972, Portes and Zhou 1996, Yang and Aldrich 2014, Evans and Leighton 1989, Hegde and Tumlinson 2015).

Prior Incarceration. Prior incarceration is measured by whether the survey respondent served time in a correctional institution. NLSY79 reports yearly data on “Type of Residence” that identifies those NLSY79 respondents who resided in jail at each interview date. Those who

resided in jail or prison in any of the previous years were marked as 1 the prior incarceration variable. As a supplement, those who responded “in jail” to questions within post-1988 *Employer Supplements* and the "Gaps Not Working" sections of the main questionnaires for the reason not looking for work when not employed was also used to identify incarcerated respondents.

The NLSY97 documents monthly status, i.e., whether the respondent was incarcerated or not in each month of the year, collected yearly from 1992 to 2015. The prior incarceration variable is 1 if respondents said they were previously incarcerated in any months of year $t-1$ or earlier, and 0 otherwise. This prior incarceration variable provides the key information needed to estimate the effect of incarceration after release. I find that on average 1.59% of the survey respondents were currently incarcerated each year, and 9.34% have been incarcerated at least once during the years 1992 to 2015. This is similar to statistics from other studies and samples, where the percentage of those who have been previously incarcerated range from 7.8% to 9.2% (Western 2002, Bonczar and Beck 1997). The accuracy of incarceration as measured in the NLSY has been further assessed by Western (2002), who shows comparable incarceration trends between the NLSY survey and aggregate information from the CPS and the Bureau of Justice Statistics' administrative data. Individuals were excluded from analyses in the years when they were incarcerated, since of course they were unable to participate in employment or entrepreneurship. Current incarceration status can also be controlled for by adding a variable measuring whether the respondent was incarcerated in current year t . This approach yields substantively identical results.

Financial Capital. I measure financial capital or financial resources of entrepreneurship through the business ownership questions in NLSY79. Based on the question of the source of financial

resources of the business, respondents choose to answer between the following choices: (1) Loan from Bank or Financial Institution, (2) Credit Card, (3) Business Loan from Local, State, or Federal Government, (4) Loan or Investment from Family & Friends, (5) Personal or Family Savings & Assets, (6) Personal or Family Home Equity Loan, (7) Other (None Needed). I categorize (1), (2), and (3) as gaining financial capital from Financial Institutions or Government, and (4), (5), (6) as gaining financial capital from Family, Friends, or Personal Savings.

Human Capital. I account for individual-level human capital differences that may impact entrepreneurial barriers. Specifically, I include variables on individual educational attainment and cognitive ability. I measured educational attainment by the log years of total education completed. I find similar results when measuring educational attainment as the highest educational degree attained. Cognitive ability of individuals is measured by the percentiles generated from the Armed Services Vocational Aptitude Battery (ASVAB) Test scores. The ASVAB Test, or the composite percentile generated from this test (Armed Forces Qualification Test Score), has been used to measure the cognitive ability of individuals in the setting of both incarceration and entrepreneurship (Western 2002, Fairlie 2002, Hegde and Tumilson 2018). The ASVAB Test measures the respondent's knowledge and skills in the topical areas of Arithmetic Reasoning, Math Knowledge, Word Knowledge, and Paragraph Comprehension. The NLSY97 respondents took the ASVAB from the summer of 1997 through the spring of 1998, when they were 12 to 18 years of age. The NLSY79 respondents took the ASVAB during the summer and fall of 1980, as they participated in an effort of the U.S. Departments of Defense and Military Services to update the norms of the Armed Services Vocational Aptitude Battery (ASVAB). I

use the age-adjusted percentiles of the ASVAB Test scores, which were generated using the procedures described in the NLSY97 Codebook Supplement Appendix 10.

Family Poverty/Wealth. I measure family wealth or poverty level as a proxy for social capital of the survey respondent. In NLSY79, I measure family wealth through the Family Poverty Status variable. This variable is created for each survey year and indicates whether a respondent's total family income for the past calendar year was above or below the poverty level. Information used to create the 1979-2018 poverty variables is derived from" either the total family income information provided during the household interview by the parent when the respondent was living in the parental home or the sum of component income sources reported by the respondent (when not living in the parental home) during administration of the "Income" section of each questionnaire" (NLSY79 Codebook). I also use the total family income as robustness and find consistent results. In NLSY97, I use the total family income information provided in the income section of the questionnaire.

3.4 Quantitative Results

First, I find that formerly incarcerated individuals are 55% less likely to have financial capital from financial institutions such as bank loans or credit cards, or the government. This leads formerly incarcerated individuals to rely on personal savings or family and friends for their financial resources to start their own businesses. Formerly incarcerated individuals are also 70% more likely to start businesses where no financial capital is needed. While such barriers to gaining access to capital from financial institutions or the government exists regardless of race, I find that it is particularly pronounced for Black and Hispanic formerly incarcerated individuals, suggesting discrimination-based differences in terms of gaining access to capital.

Table 3.1: Does Incarceration Impact Gaining Capital from Financial Institutions?

Sample	Dependent Variable Financial Capital from Financial Institution		
	Full Sample	Black or Hispanic Individuals	White Individuals
	(1)	(2)	(3)
Prior Incarceration	-0.059* (0.029)	-0.064* (0.027)	-0.046 (0.049)
Ln(AFQT Scores)	-0.026 (0.016)	-0.048* (0.019)	0.002 (0.029)
Ln(Education Years)	0.120+ (0.063)	0.278** (0.086)	-0.014 (0.093)
Family Poverty	-0.043+ (0.025)	-0.036 (0.027)	-0.048 (0.053)
Black Individuals	-0.047 (0.029)	-0.067* (0.030)	
Non-Black, Non-Hispanic Individuals	0.020 (0.028)		
Female	0.006 (0.020)	-0.020 (0.030)	0.020 (0.027)
N	955	350	605
adj. R-sq	0.008	0.035	0.000

* Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Table 3.2: Does Incarceration Impact Gaining Capital from Friends and Family?

Sample	Dependent Variable Financial Capital from Family & Friends		
	Full Sample	Black or Hispanic Individuals	White Individuals
	(1)	(2)	(3)
Prior Incarceration	-0.026 (0.061)	-0.045 (0.093)	-0.021 (0.085)
Ln(AFQT Scores)	-0.003 (0.020)	-0.025 (0.022)	0.033 (0.036)
Ln(Education Years)	0.045 (0.092)	-0.024 (0.129)	0.041 (0.136)
Family Poverty	0.057 (0.043)	0.026 (0.052)	0.125+ (0.071)
Black Individuals	0.060 (0.047)	0.066 (0.047)	
Non-Black, Non-Hispanic Individuals	-0.017 (0.043)		
Female	-0.093** (0.029)	-0.031 (0.047)	-0.125*** (0.037)
N	955	350	605
adj. R-sq	0.013	0.000	0.018

* Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

Descriptive statistics show the difference of the source of financial capital both by incarceration and race. In Table 3, I find that formerly incarcerated individuals are more than 50% less likely to obtain financial capital through financial institutions or the government, while they are similarly likely to obtain capital from their family, friends, or personal savings. In Table 4, which looks at the difference of the source of financial capital by incarceration and race, I find that formerly incarcerated individuals, regardless of race, are less likely to obtain capital from financial institutions or the government. Yet, formerly incarcerated individuals of racial minorities have the lowest rates of gaining capital from financial institutions or the government, suggesting the added barriers when there is an intersection of race and incarceration.

Table 3.3: Financial Source of Entrepreneurship by Incarceration

	Formerly Incarcerated		Not Formerly Incarcerated	
Financial Institution or Government	5	5.6%	105	12.5%
Loan from Bank or Financial Institution	3	3.3%	70	8.3%
Credit Card	2	2.2%	29	3.4%
Business Loan from Local, State, or Federal Government	1	1.1%	8	1.0%
Family, Friends, or Personal Savings	77	85.6%	728	86.5%
Loan or Investment from Family & Friends	73	81.1%	698	82.9%
Personal or Family Savings & Assets	73	81.1%	706	83.8%
Personal or Family Home Equity Loan	5	5.6%	35	4.2%
Other (None Needed)	11	12.2%	61	7.2%
Total Number of Entrepreneurship	90		842	

*Note: Multiple financial sources are available per entrepreneurial venture

Second, I find that formerly incarcerated entrepreneurs are less likely to go into high capital intensive industries. Formerly incarcerated individuals are least likely to start businesses in industries that are capital intensive such as Mining, Manufacturing, or Finance, Insurance, and Real Estate. Instead, formerly incarcerated individuals tend to start businesses in industries such as Construction or Services that require little start-up capital and no physical locations.

Table 3.4: Financial Source of Entrepreneurship by Incarceration & Race

	Hispanic				Black				Non-Black, Non-Hispanic			
	FIP	%	non-FIP	%	FIP	%	non-FIP	%	FIP	%	non-FIP	%
Financial Institution or Government	2	6.9%	14	10.9%	1	4.2%	12	6.8%	2	5.4%	79	14.7%
Loan from Bank or Financial Institution	1	3.4%	10	7.8%	0	0.0%	4	2.3%	2	5.4%	56	10.4%
Credit Card	2	6.9%	3	2.3%	0	0.0%	6	3.4%	0	0.0%	20	3.7%
Business Loan from Local, State, or Federal Government	0	0.0%	1	0.8%	1	4.2%	2	1.1%	0	0.0%	5	0.9%
Family, Friends, or Personal Savings	23	79.3%	103	80.5%	21	87.5%	164	93.2%	33	89.2%	461	85.7%
Loan or Investment from Family & Friends	20	69.0%	99	77.3%	21	87.5%	155	88.1%	32	86.5%	444	82.5%
Personal or Family Savings & Assets	20	69.0%	99	77.3%	21	87.5%	160	90.9%	32	86.5%	447	83.1%
Personal or Family Home Equity Loan	4	13.8%	6	4.7%	0	0.0%	4	2.3%	1	2.7%	25	4.6%
Other (None Needed)	5	17.2%	17	13.3%	2	8.3%	7	4.0%	4	10.8%	37	6.9%
Total Number of Entrepreneurship	29		128		24		176		37		538	

*Note: Multiple financial sources are available per entrepreneurial venture

Table 3.5: Entrepreneurship Industry by Incarceration & High or Low Starting Capital

Entrepreneurship Industry	Non FIP	%	FIP	%	Difference (Non FIP - FIP)	High Starting Capital vs. Low Starting Capital (NSSBF)
1070 TO 3990: MANUFACTURING	79	2.21	2	0.68	1.53	High
170 TO 290: AGRICULTURE, FORESTRY AND FISHERIES	59	1.65	7	2.36	-0.71	High
370 TO 490: MINING	8	0.22	0	0.00	0.22	High
4070 TO 4590: WHOLESALE TRADE	58	1.62	7	2.36	-0.74	High
4670 TO 5790: RETAIL TRADE	308	8.62	19	6.42	2.20	High
570 TO 690: UTILITIES	3	0.08	1	0.34	-0.26	High
6070 TO 6390: TRANSPORTATION AND WAREHOUSING	96	2.69	17	5.74	-3.05	High
6470 TO 6780: INFORMATION AND COMMUNICATION	81	2.27	8	2.70	-0.43	High
6870 TO 7190: FINANCE, INSURANCE, AND REAL ESTATE	139	3.89	3	1.01	2.88	High
7270 TO 7790: PROFESSIONAL AND RELATED SERVICES	670	18.76	57	19.26	-0.50	Low
770: CONSTRUCTION	424	11.87	81	27.36	-15.49	Low
7860 TO 8470: EDUCATIONAL, HEALTH, AND SOCIAL SERVICES	411	11.51	9	3.04	8.47	Low
8560 TO 8690: ENTERTAINMENT, ACCOMODATIONS, AND FOOD SERVICES	305	8.54	21	7.09	1.45	Low
8770 TO 9290: OTHER SERVICES	881	24.66	60	20.27	4.39	Low
9370 TO 9590: PUBLIC ADMINISTRATION	13	0.36	0	0.00	0.36	High
9950 TO 9990: ACS SPECIAL CODES	37	1.04	4	1.35	-0.31	--
Total	3,572	1	296	1		

Table 3.6: How Likely are Formerly Incarcerated Entrepreneurs to be in High Capital Industries?

Sample	Dependent Variable
	High-Capital Industry Entrepreneurship
	Entrepreneurs
	(1)
Past Incarceration	-0.047*** (0.014)
Ln(Years of Education)	-0.006 (0.026)
ASVAB Test Score	0.000* (0.000)
Yearly Income (1000\$) (n-1)	0.030*** (0.003)
Family Income (1000\$) (n-1)	0.006* (0.003)
Female	-0.057*** (0.007)
Hispanic	-0.026 (0.039)
Non-Black/ Non-Hispanic	-0.027* (0.011)
Year Fixed Effects	Yes
Location Fixed Effects	Yes
N	13990
adj. R-sq	0.123

* Note: Robust standard errors are used in these models. + p< 0.1 * p< 0.05 ** p<0.01 *** p<0.001

I also find that the financial barriers that formerly incarcerated individuals face negatively impacts entrepreneurial outcomes such as longevity. My results show that ventures started by formerly incarcerated individuals are more likely to fail within a year of founding, and this is particularly true for ventures that are not backed by financial institutions or the government. Businesses started by formerly incarcerated individuals, on average, have more than 10% shorter

longevity and again this is more pronounced for businesses that are not funded by financial institutions or the government.

Table 3.7: Ownership Length by Incarceration & Business Source

	Non Formerly Incarcerated				Formerly Incarcerated			
	Family/Personal		Financial Institute		Family/Personal		Financial Institute	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Ownership Length in Years	2.47	(3.16)	2.48	(3.26)	2.18	(3.22)	2.25	(2.87)

Businesses of formerly incarcerated individuals are smaller in terms of number of employees. Businesses founded by non-formerly incarcerated individuals are 30% more likely to have more than 10 employees, and 55% more likely to have more than 50 employees.

Table 3.8: Ownership Length in Years by Incarceration

	non-FIP		FIP		Total
0 years	304	42%	38	51%	342
1	72	10%	7	9%	79
2	88	12%	4	5%	92
3	58	8%	6	8%	64
4	48	7%	2	3%	50
5	39	5%	4	5%	43
6	26	4%	4	5%	30
7	18	2%	2	3%	20
8	20	3%	1	1%	21
9	16	2%	0	0%	16
10	15	2%	3	4%	18
11	9	1%	2	3%	11
12	10	1%	0	0%	10
13	2	0%	0	0%	2
14	2	0%	1	1%	3
Total	727		74		801

Table 3.9: Number of Employees by Incarceration

	Non FIP		FIP	
1 TO 4	679	69.6%	68	68%
5 TO 9	142	14.6%	20	20%
10 TO 14	64	6.6%	3	3%
15 TO 19	27	2.8%	3	3%
20 TO 24	10	1.0%		
25 TO 29	5	0.5%	4	4%
30 TO 34	9	0.9%	1	1%
35 TO 39	7	0.7%		
40 TO 44	5	0.5%		
45 TO 49	5	0.5%		
50 TO 99999999	22	2.3%	1	1%
Total	975		100	

Finally, the legal form of the businesses started by formerly incarcerated individuals are more likely to be sole proprietorships or partnerships (89%) than corporations (17%), compared to non-formerly incarcerated individuals. This is particularly more pronounced by race, where I find that formerly incarcerated racial minorities (Black and Hispanic formerly incarcerated individuals) are more likely to found sole proprietorships or partnerships than corporations, compared to White formerly incarcerated individuals.

Table 3.10: Business Legal Form by Incarceration

	Non-FIP		FIP		Total
Sole proprietorship	553	56.7%	62	62%	615
Partnership or limited liability partner	129	13.2%	17	17%	146
Limited liability corporation (LLC)	107	11.0%	6	6%	113
Sub-chapter S corporation	69	7.1%	7	7%	76
General corporation	57	5.8%	4	4%	61
Nonprofit organization	4	0.4%	0	0%	4
Other (specify)	56	5.7%	4	4%	60
Total	975		100		1,075

Table 3.11: Business Legal Form by Incarceration & Race

FIP	HISPANIC		BLACK		NON- BLACK		Total
Sole proprietorship	19	63%	17	68%	26	58%	62
Partnership or limited liability partner	6	20%	3	12%	8	18%	17
Limited liability corporation (LLC)	2	7%	0	0%	4	9%	6
Sub-chapter S corporation	1	3%	3	12%	3	7%	7
General corporation	1	3%	2	8%	1	2%	4
Other (specify)	1	3%	0	0%	3	7%	4
Total	30		25		45		100

Non-FIP	HISPANIC		BLACK		NON- BLACK		Total
Sole proprietorship	88	63%	110	55%	355	56%	553
Partnership or limited liability partner	18	13%	28	14%	83	13%	129
Limited liability corporation (LLC)	11	8%	27	14%	69	11%	107
Sub-chapter S corporation	8	6%	6	3%	55	9%	69
General corporation	5	4%	13	7%	39	6%	57
Nonprofit organization	0	0%	3	2%	1	0%	4
Other (specify)	10	7%	12	6%	34	5%	56
Total	140		199		636		975

3.5 Qualitative Results

The interviews corroborated many of the findings and mechanisms from the quantitative findings. Formerly incarcerated entrepreneurs mentioned the barriers they face in obtaining financial capital from loans or financial institutions.

“(I had challenges getting loans) Not only at first, but even after. I can't get no nothing from nowhere. Nobody won't get me anything, and I made a hundred thousand dollars in my first year out (of prison). Nobody won't give me... But now I don't ask for anything. I don't try to get anything. I don't try to get no loans. I tried these things in the past when I wasn't successful, so I just do my own thing from my own money and go from there.”

A non-profit that helps formerly incarcerated individuals found businesses went on to suggest how the barriers to financial capital was related to the incarceration record, rather than differences in quality or aspiration. For example:

“The entrepreneurship journey has a lot of ups and downs - a lot of challenges, and they need to be prepared for that as well. (...) The formerly incarcerated entrepreneurs face challenges that others don't. I mean, trying to get loans. Just looking to investors, right? And them looking at you like, "Okay. I'm not going to give you money." So they have a lot of nit-picking, so it sort of never ends because... I mean for him (successful formerly incarcerated entrepreneur), he's been out (of prison) for years, he's been doing this (entrepreneurship) for years. He's had so many levels of success and so many news stories and he'll still go to an investment firm and they'll still look at him in a certain way.”

Such difficulties in gaining financial capital lead to the suggestion that formerly incarcerated individuals start businesses both from their personal savings and in industries that require little start-up capital. For example, one formerly incarcerated entrepreneur who started a paralegal company said:

“If you need to work first and get some money up, do that. For me, my business wasn't a lot to... it didn't cost a lot for me to start this because it's really around intellectual property. All I really had to invest in was a copy machine, a laptop, ink, and paper. That wasn't anything but \$1,500 to do that. So most businesses require a decent amount of cap to really get started. So I would suggest that they (other formerly incarcerated people

looking to start a business) start a business that doesn't require a lot of capital and doesn't require a lot of employees.”

Another formerly incarcerated individual mentioned that:

“I wish I could have secured some type of secure, some type of financial capital, like to have my own office. My business wasn't the type of business that really needed financial capital. I didn't need any type of inventory. Yeah, it just wasn't that type of business, where I needed financial capital, financial start-up capital.”

Another non-profit that helps formerly incarcerated individuals found their businesses gave suggestions for aspiring formerly incarcerated entrepreneurs, particularly because of the financial constraints.

“It's like, there are some easy businesses that you can start up. And our seniors who start up a business or less than \$20,000 and some think of an idea that you can make money very quickly off. And once you do that, you get it up and running, you get some income, and then you can decide what you want to do with it. We don't want people to think... Don't think of something super complicated. There are easy business ideas out there, try to think of that.”

She went on to give examples of such low-capital intensive businesses:

“Catering businesses... We have somebody who did his own catering, he got started easily. A bakery; the fitness stuff is always good. We have ideas like dog walking, dog grooming, cleaning businesses have been pretty big as well for people. (...) I think those

are some of the big ones that are pretty common. Personal painting and all that. Haircutting business is another one. Fixing cars was another one that we thought was pretty easy. So yeah, those are some of the lower hanging fruit ideas that we've had people do and be pretty successful there.”

3.6 Discussion

This essay finds that formerly incarcerated individuals face barriers and challenges, compared to non-formerly incarcerated individuals, when pursuing entrepreneurship. Formerly incarcerated individuals are less likely to gain capital from financial institutions, and thus are less likely to found businesses in high-capital intensive industries. Furthermore, I find suggestive evidence that such barriers to gaining competitive financial capital may deter formerly incarcerated individuals from achieving high-growth entrepreneurship.

As the first step to investigating the potential barriers that formerly incarcerated individuals face in entrepreneurship, this study contributes to extending our understanding of the challenges that formerly incarcerated people face in the labor market. While most studies on incarceration and discrimination have been focused on employment barriers, this essay provides insights into the potential barriers and challenges to entrepreneurship. Understanding the limitations of entrepreneurship as an alternative career choice is essential, as entrepreneurship is increasingly being acknowledged as a valid labor market option for formerly incarcerated individuals.

This essay also provides implications to policymakers and practitioners. The results that financial barriers to entrepreneurship for formerly incarcerated individuals impact the type and industry of entrepreneurship they pursue and, in the long-term, the longevity and size of the

venture illuminate the broader negative repercussions of entrepreneurial barriers. Initial financial barriers for formerly incarcerated individuals can have the long-term detrimental impact of deterring the growth and success of formerly incarcerated individuals as entrepreneurs. This particularly speaks to entrepreneurship as a pathway to upward social and economic mobility for formerly incarcerated individuals. While entrepreneurship is gaining attention as a way to overcome discrimination for formerly incarcerated individuals, with the ongoing financial barriers to entrepreneurship, fully overcoming discrimination through entrepreneurship may still be a difficult task for formerly incarcerated people. In particular, with the increased dependence of formerly incarcerated individuals on family and friends to start businesses, entrepreneurship may become an exclusive way to overcome discrimination for the narrow pool of more privileged or well-connected formerly incarcerated individuals.

As this essay is the first step to understanding barriers to entrepreneurship for the formerly incarcerated, there are numerous opportunities for future research. While this study illuminates the potential barriers formerly incarcerated individuals face in gaining financial capital, the underlying mechanism as to why formerly incarcerated individuals are disadvantaged in gaining financial resources, particularly from financial institutions, remains unclear. Therefore, future research should investigate the underlying mechanisms behind the challenges to entrepreneurship for formerly incarcerated individuals, examining how much of the barriers is directly accountable to discrimination, as compared to selection. Furthermore, while this essay focuses on financial barriers due to data limitations, research on other barriers to entrepreneurship, such as human capital and social capital, will provide us a full understanding of the challenges that formerly incarcerated individuals face when pursuing entrepreneurship as a career.

Conclusion

The three essays of my dissertation examine entrepreneurship as a way to overcome labor market discrimination for the formerly incarcerated people in the United States. By answering the questions of how and why formerly incarcerated individuals engage in entrepreneurship and by further examining the impact of entrepreneurship, this dissertation provides an understanding of the role of entrepreneurship as a career choice for the formerly incarcerated.

To summarize the findings of my dissertation, the first essay of my dissertation introduces entrepreneurship as a valid alternative route that formerly incarcerated individuals seek in the face of labor market discrimination. Formerly incarcerated individuals, particularly those who are African American, are not only more likely to become entrepreneurs because of the lack of employment opportunities, but also are more likely to achieve economic and social integration through entrepreneurship. The second essay of my dissertation shows that entrepreneurship can provide a bridge back to employment for formerly incarcerated individuals, by helping formerly incarcerated individuals secure employment after their departure from entrepreneurship. The third essay of my dissertation examines the barriers that formerly incarcerated individuals face when becoming entrepreneurs, particularly high-growth successful entrepreneurs, providing evidence of the potential limitations of entrepreneurship as a way to fully overcome discrimination for the formerly incarcerated.

As one of the first set of studies to address entrepreneurship for the formerly incarcerated population, the findings of my dissertation suggest a modification to the focus of current research on incarceration and employment. This dissertation extends prior research by drawing attention to entrepreneurship as an alternative labor market route that formerly incarcerated individuals can pursue to mitigate the stigma associated with the mark of a criminal record. Entrepreneurship

not only helps formerly incarcerated people find work and gain competitive income, but also increases their likelihood of long-term career success and staying out of prison. While employment remains a key channel to successful reentry, this dissertation introduces entrepreneurship as an alternative way formerly incarcerated people can achieve both economic and social reintegration.

My dissertation also speaks to the important discussion on racial inequality and its intersection with the criminal justice system in the United States. The results from all three essays show evidence of the persistent racial inequality that African American and Hispanic formerly incarcerated individuals face, both from employers and financial institutions. The heightened employer discrimination for formerly incarcerated individuals of racial minorities emphasizes the importance of entrepreneurship as an opportunity for economic and social integration for formerly incarcerated individuals of minority race. Yet, the increased entrepreneurial barriers that African American and Hispanic formerly incarcerated individuals face also suggests the additional challenges that racial minorities with incarceration records experience when pursuing economic and social integration through entrepreneurship.

My dissertation provides theoretical contributions by broadly speaking to the role and impact of entrepreneurship by those who are marginalized in the labor market and society. While prior entrepreneurship research has been mostly focused on high-growth entrepreneurship by privileged populations, my dissertation highlights how entrepreneurship can be a way to overcome inequality for stigmatized groups. The three essays of my dissertation particularly focus on a specific population, the formerly incarcerated population in the United States, but my work provides insights for other disadvantaged groups in the society by addressing broader theories of discrimination. I hope my work informs scholars and policymakers to consider

entrepreneurship as a viable way forward for people facing barriers in the labor market and society.

By examining entrepreneurship as a valid opportunity for formerly incarcerated individuals, my dissertation not only contributes to research but also has implications for policymakers and practitioners. While the focus of researchers and policymakers on employment has led to more programs and policies around boosting employment for the formerly incarcerated population, my dissertation can draw attention to the importance of investing in entrepreneurship. As the first two essays suggest that entrepreneurship can provide pathways to both economic and social integration, this dissertation draws attention to the potential of entrepreneurship as a tool for successful reentry. At the same time, as the third essay provides evidence of the barriers that formerly incarcerated individuals face when pursuing entrepreneurship, my dissertation calls for attention on how policy and program initiatives can help mitigate the challenges that bar entrepreneurship from being a legitimate option for the formerly incarcerated.

With a growing number of individuals returning back to society from prisons and jails and the persistent discrimination in the labor market, it is increasingly important to consider how formerly incarcerated individuals can overcome the common pathway to unemployment and recidivism. My dissertation is an initial attempt to introduce entrepreneurship as an alternative response to the poor employment outcomes from labor market discrimination that often await formerly incarcerated individuals. Future research is needed to expand this emphasis on entrepreneurship by exploring the antecedents, process, and diverse outcomes of entrepreneurship for formerly incarcerated individuals.

For example, I plan to examine the societal benefits of entrepreneurship by formerly

incarcerated people. My interviewees have suggested that formerly incarcerated entrepreneurs are more likely to hire other justice-impacted individuals and start pro-social enterprises. On top of examining this positive spillover effect, I plan to investigate how entrepreneurship by formerly incarcerated people impacts neighborhoods in terms of crime rates, poverty, and racial inequality. I have also started a project to examine the career choices and mobility of individuals with criminal records using the Denmark Census Data. In addition to understanding the comparative differences between the United States and Denmark, I am interested in exploring the impact of entrepreneurship on family relations, health, and generational social mobility of the formerly incarcerated.

I also plan to extend my research to the field by working in collaboration with employers, to answer the question of when and how hiring formerly incarcerated people benefits employers. Based on some of my preliminary findings, I find that hiring individuals with criminal records benefits employers by providing a large, productive talent pool with higher commitment and job satisfaction. I hope to continue working on this research as well as addressing the question of how hiring formerly incarcerated people also affects the performance and commitment of fellow co-workers.

Beyond exploring the labor market choices of formerly incarcerated people, I am also planning to investigate policies and programs that can improve the criminal justice system, such as in-prison entrepreneurship education and job training. In light of the concern of whether the current system is designed to set the incarcerated, particularly those of racial minorities, up for failure, I hope to find solutions that counter this effect. Incarcerated individuals are obligated to work in prisons for extremely low wages, averaging around thirty cents per hour. For most, these jobs, such as laundry or yard sanitation, are not marketable or skill-transferrable outside prisons,

and provide minimal job training. In-prison education is also scarce and unsystematic. Therefore, I hope to collaborate with the United States Department of Corrections to explore the possibility of employers hiring individuals currently in prison to provide work, meaningful income, and skill-building training. Furthermore, many universities have education and entrepreneurial training programs for currently or formerly incarcerated individuals. I aim to start a collaborative study to find the impact of such training programs, and to possibly provide a roadmap for education that could be replicated by other higher education institutions, correctional institutions, and the government.

In the long run, I plan to expand my research agenda to other groups that face discrimination, such as immigrants, individuals with disabilities, and racial minorities. While fundamentally minimizing stigmatization should be the gold standard, I hope my research will help the cause by introducing and investigating creative organizational and societal solutions to overcome barriers.

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